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FIFTY-FIRST YEAR

PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY

ESTABLISHED IN 1872

Vol. LXXV. No. 1 NEW YORK AND CHICAGO, JULY 6, 1922 Annum, $4.00 Single Copy, 10 Cents

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PAGE 21!

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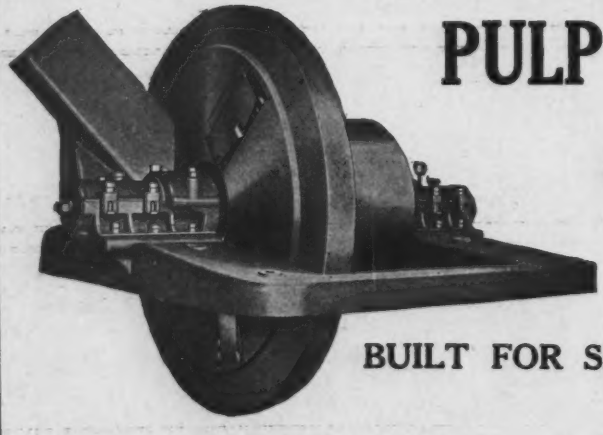
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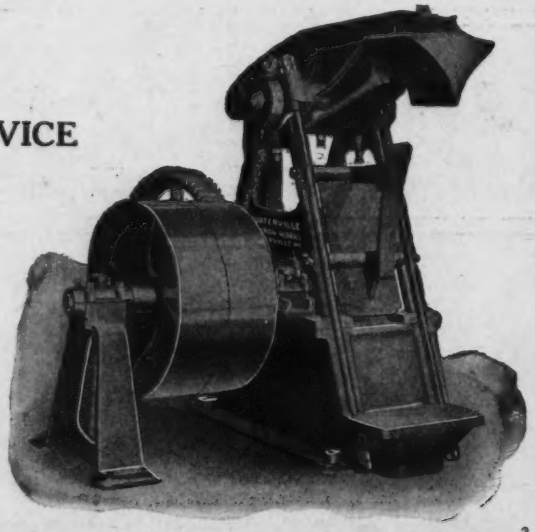
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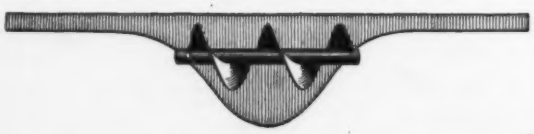

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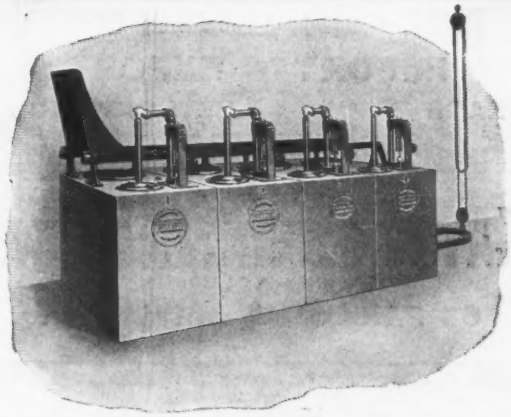

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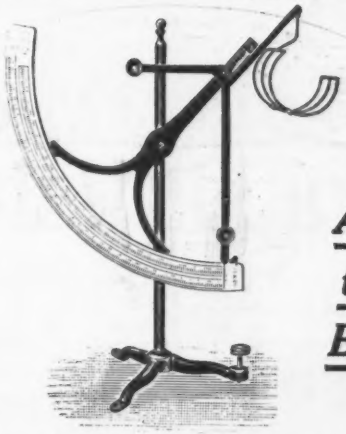

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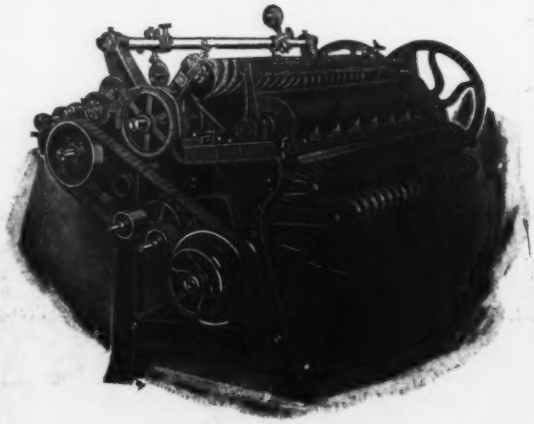

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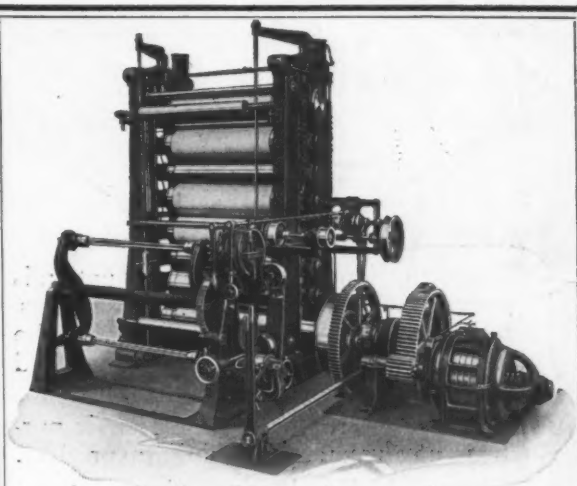

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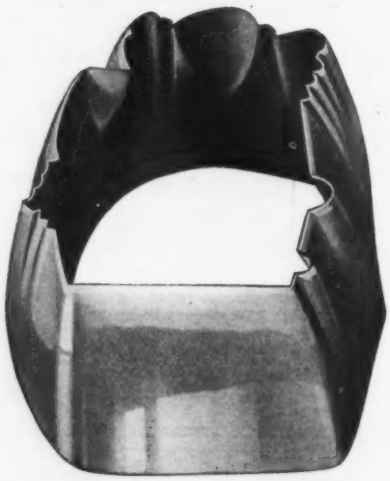

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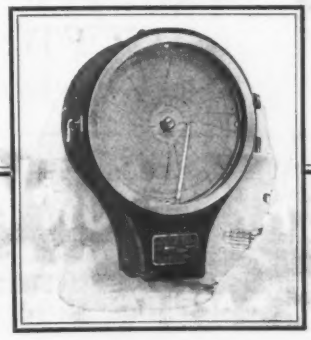

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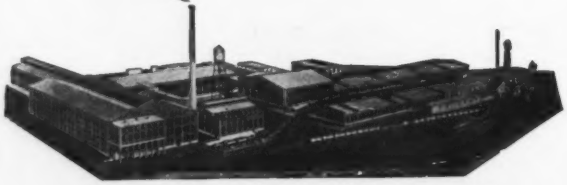

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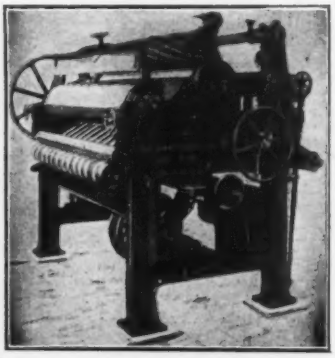

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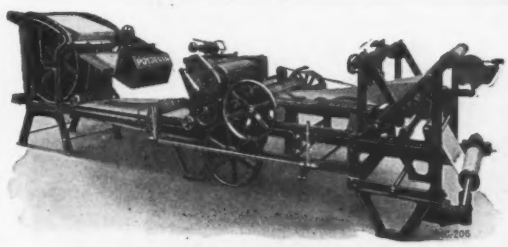

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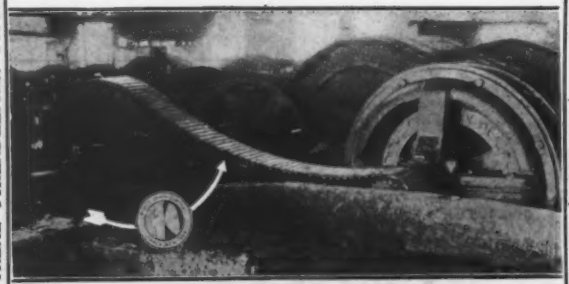

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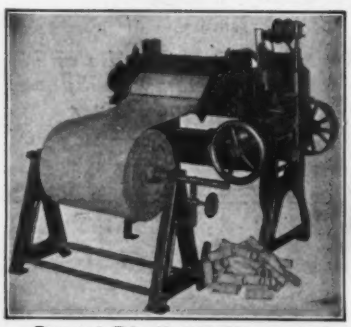

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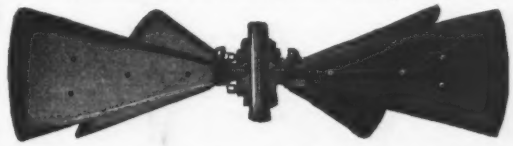

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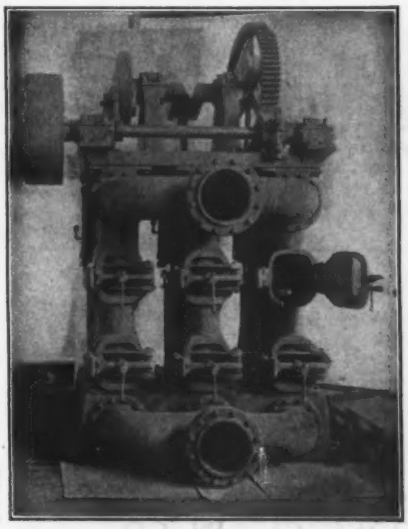

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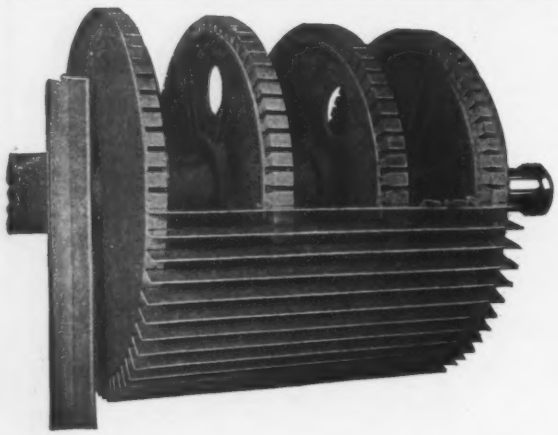

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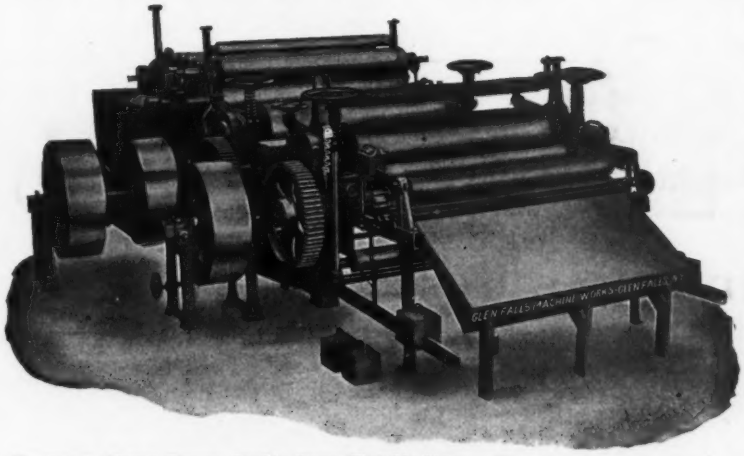

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THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY

FIFTY-FIRST YEAR

PUBLISHED EVERY THURSDAY BY THE

LOCKWOOD TRADE JOURNAL COMPANY, INC.

LESLIE R. PALMER, President — J. W. VAN GORDON, Vice-President

Telephone { 2380 / 2381 / 2382 } Vanderbilt — *10 EAST 39TH ST., N. Y., U. S. A.* — Cable Address Catchow, New York

Western Publication Office—431 S. Dearborn Street, Chicago
New England Office—Room 46, 127 Federal Street, Boston
Washington Office—L. M. Lamm, 63 Home Life Bldg.
Western New England News Office—Michael Connor, Holyoke
London Office—Stonhill & Gillis, 58 Shoe Lane

THE PAPER TRADE JOURNAL is the pioneer publication in its field, and has for many years been the recognized Organ of the Paper and Pulp Industry. Its circulation is greater than the combined circulation of all other publications in the field. Entered at New York Post Office as second-class mail matter.

Terms of Subscription

UNITED STATES AND MEXICO.....Per year, $4; 6 months, $2; 3 months, $1
CANADA AND FOREIGN COUNTRIES IN POSTAL UNION.....Per year, $6
SINGLE COPIES .....10 cents

Other Publications of Lockwood Trade Journal Company, Inc.

AMERICAN STATIONER AND OFFICE OUTFITTER (Weekly).....Per year, $3
LOCKWOOD'S DIRECTORY OF THE PAPER STATIONERY AND ALLIED TRADES (Annual).....Per copy, $7

Vol. LXXV. No. 1 — NEW YORK AND CHICAGO — Thursday, July 6, 1922

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XUM

PRODUCTION OF ALL PAPERS DURING THE MONTH OF MAY

According to Figures Just Issued by the Federal Trade Commission News Print Paper Mill Stocks at the End of the Month Equalled Six Days' Average Output, Book Paper Mill Stocks Equalled Thirteen Days' Average Output, Paper Board Mill Stock Equalled Ten Days' Average Output, Wrapping Paper Mill Stocks Equalled Thirty Days' Average Output, and Bag Mill Stocks Six Days' Output.

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., July 5, 1922.—The attached tabulation is a summary of production, shipments, and stocks of paper mills in the United States as reported to the Federal Trade Commission for the month of May, 1922. This summary is compared with the month of May, 1918, to 1921, inclusive.

The average production for all grades, except boxboard, is based upon the production for the years 1917 to 1921, inclusive, and the average stocks are based upon the stocks carried for the years 1918 to 1921, inclusive.

Figures for boxboard prior to March, 1920, were included in paperboard. The average prduction and stocks for boxboard are based upon the figues tabulated during the period March, 1920, to December 31, 1921.

The production has been classified for convenience into 12 grades, according to the grades of paper manufactured by the reporting mills. Some mills making several grades appear in more than one group which causes duplication in the body of the tonnage tables in the number of mills.

For each grade the number of mills includes all mills commonly operating on that grade, regardless of whether they produced any tonnage of that particular grade during the month. In other words, it includes all mills reporting either production or merely stocks or shipments of that grade.

The stocks of paper carried by different mills depend not only upon the condition of the market but also upon the kind of paper made, trade customs, etc.

Tonnage Summary

Production, shipments and stocks of paper, by grades, for the month of May, 1922, compared with May, 1921, 1920, 1919 and 1918, together with average production and stocks.

Grade	Number of Mills	Stocks on Hand First of Month, Net Tons	Production, Net Tons	Shipments, Net Tons	Stocks on Hand End of Month, Net Tons
News Print (Standard and Special Grades of News):					
May, 1922	82	24,874	129,950	130,043	24,781
May, 1921	87	35,106	78,868	82,776	31,198
May, 1920	92	21,673	129,230	128,080	22,823
May, 1919	70	36,385	105,819	115,120	27,084
May, 1918	66	24,864	111,242	119,984	26,122
Average	..	.....	114,440	.....	25,307
Standard News:					
May, 1922	69	20,101	120,654	121,043	19,712
May, 1921	69	29,580	73,181	75,806	26,955
May, 1920	75	19,085	119,906	118,832	20,159
May, 1919	53	31,236	96,192	105,591	21,837
May, 1918	50	18,891	94,362	94,875	18,378
Average	..	.....	103,688	.....	20,900
Book (M. F., S. S. C. and Coated):					
May, 1922	92	37,367	82,574	80,450	39,491
May, 1921	93	38,255	52,642	51,258	39,639
May, 1920	94	27,001	92,856	97,555	22,302
May, 1919	88	35,145	76,821	75,905	36,061
May, 1918	92	28,851	78,455	74,568	32,738
Average	..	.....	76,258	.....	30,305
Paperboard, Total (Straw, Fiber, Leather, Chip, Box, Etc.):					
May, 1922	227	69,756	176,790	180,844	65,702
May, 1921	238	70,780	122,801	125,602	67,979
May, 1920	248	46,938	213,475	217,595	42,818
May, 1919	237	62,262	151,651	152,041	61,872
May, 1918	235	38,394	174,894	173,421	39,867
Average	..	.....	164,164	.....	49,989
Boxboard:					
May, 1922	134	32,723	130,078	131,529	31,272
May, 1921	137	35,233	85,546	88,141	32,638
May, 1920	143	21,555	149,867	154,114	17,308
Average	..	.....	115,882	.....	26,048
Wrapping (Kraft, Manila, Fiber, Etc.):					
May, 1922	149	68,401	71,494	68,989	70,906
May, 1921	145	58,622	53,084	52,203	59,503
May, 1920	148	31,036	70,511	75,892	25,655
May, 1919	164	75,982	56,579	56,696	75,865
May, 1918	151	40,054	61,763	58,689	43,128
Average	..	.....	61,516	.....	43,482
Bag (All Kinds):					
May, 1922	46	3,401	17,345	17,442	3,304
May, 1921	37	3,432	7,323	7,363	3,392
May, 1920	44	3,595	19,551	20,197	2,949
May, 1919	43	5,552	11,831	12,125	5,258
May, 1918	28	2,015	14,653	14,008	2,660
Average	..	.....	13,806	.....	3,362
Fine (Writing, Bonds, Ledgers, Etc.):					
May, 1922	103	35,806	30,129	28,950	36,985
May, 1921	107	40,083	17,485	16,425	41,143
May, 1920	115	32,218	31,575	35,759	28,034
May, 1919	115	38,239	25,010	22,992	40,257
May, 1918	102	34,661	33,542	41,571	26,632
Average	..	.....	27,742	.....	33,192
Tissue (Toilet, Crepe, Fruit, Wrappers, Etc.):					
May, 1922	95	8,529	14,688	14,100	9,117
May, 1921	94	7,746	11,135	11,560	7,321
May, 1920	101	6,839	16,053	17,003	5,889
May, 1919	88	8,368	11,711	11,339	9,740
May, 1918	75	5,995	11,672	12,244	5,423
Average	..	.....	12,766	.....	6,737
Hanging (No. 2 Blank, Oatmeal, Tile, Etc.):					
May, 1922	26	5,323	6,414	5,646	6,091
May, 1921	22	10,087	2,479	2,044	10,522
May, 1920	24	1,171	10,776	10,952	995
May, 1919	20	4,080	6,297	5,059	5,318
May, 1918	22	5,824	4,714	4,913	5,625
Average	..	.....	7,228	.....	4,693
Felts and Building (Roofing, Sheathing, Etc.):					
May, 1922	46	11,584	35,391	36,240	10,735
May, 1921	54	9,669	24,058	23,577	10,150
May, 1920	56	9,971	34,048	33,383	10,636
May, 1919	47	7,738	21,972	21,401	8,309
May, 1918	42	4,581	26,077	25,399	5,259
Average	..	.....	26,026	.....	8,853
Other Grades (Specialties Not Otherwise Classified):					
May, 1922	107	19,821	25,196	26,400	18,617
May, 1921	98	19,985	14,120	13,863	20,242
May, 1920	90	15,791	27,338	26,171	16,958
May, 1919	64	13,243	12,480	11,431	14,292
May, 1918	32	6,528	21,404	23,111	4,821
Average	..	.....	20,436	.....	14,466
Total—All Grades:					
May, 1922	..	284,862	589,971	589,104	285,729
May, 1921	..	293,765	383,995	386,671	291,089
May, 1920	..	196,233	645,413	662,587	179,059
May, 1919	..	287,994	480,171	484,109	284,056
May, 1918	..	191,767	538,416	537,908	192,275
Average	..	.....	524,342	.....	220,386

The following stocks were reported on hand at terminal and delivery points on May 31, in addition to the mill stocks shown in the tabulation: News print, 278 tons; book paper, 3,361 tons; fine, 202 tons; paper board, 100 tons; wrapping, 10 tons; and "other grades" 152 tons, totalling 4,203 tons.

Stocks of book, wrapping, fine tissue, and hanging increased during the month. Stocks of all grades reported by manufacturers at the end of May amounted to 289,932 tons, including the stocks at terminal and delivery points. In addition to these stocks, jobbers and publishers reported news print stocks and tonnage in transit aggregating 191,657 tons.

177239

Ratio of Stocks to Average Production

Comparing the stocks on hand at the domestic mills on May 31, with their average daily production, based upon the combined production for 1918 to 1921, inclusive, the figures show that:

News print paper mill stocks equal 6 days' average output.
Book paper mill stocks equal 13 days' average output.
Paper board mill stocks equal 10 days' average output.
Wrapping paper mill stocks equal 30 days' average output.
Bag paper mill stocks equal 6 days' average output.
Fine paper mill stocks equal 35 days' average output.
Tissue paper mill stocks equal 19 days' average output.
Hanging paper mill stocks equal 22 days' average output.
Felts and building paper mill stocks equal 11 days' average output.
Miscellaneous paper mill stocks equal 24 days' average output.
Total paper mill stocks of all grades equal about 14 days' average output.

Imports and Exports

News print is the only grade of which the United States is a heavy importer. The bulk of this tonnage is imported from Canada.

The value of the exports of news print for April, 1922, was about 6 per cent of the imports.

The imports and exports of all grades of paper for April, 1922, compared with April, 1921, as shown by the records of the Department of Commerce, were as follows:

	April, 1922		April, 1921	
Imports:	Pounds	Value	Pounds	Value
News print	154,738,775	$5,285,534	129,556,507	$7,513,087
Book paper	50,540	8,112	45,486	12,940
Wrapping	3,954,984	147,425	139,587	8,995
Hanging	.....	43,705	.....	32,084
All other grades*	.....	233,085	.....	292,465
Exports:				
News print	6,690,109	$308,928	2,556,185	$186,518
Book paper	2,332,431	234,087	2,616,470	336,186
Paper board	.....	232,618	.....	227,067
Wrapping	3,925,731	230,307	1,997,738	198,258
Bag	.....	101,507	.....	40,957
Fine	.....	173,049	.....	322,678
Tissue	.....	96,468	.....	75,018
Hanging	.....	43,054	.....	80,372
All other grades*	.....	353,139	.....	427,565
Total imports	.....	$5,717,861	.....	$7,859,571
Total exports	.....	1,773,157	.....	1,894,619

*Includes some paper already converted into commercial articles.

The value of the total imports of all grades was about 4 per cent less than for March.

The value of the total exports for April, 1922, was less than the imports by $3,944,704, and was $121,462 less than the exports for April, 1921.

News print, Book, Paperboard, and Wrapping, were the principal grades exported, as to value.

Loss of Production, May, 1922

The idle machine time reported to the Commission for May, 1922, is shown by grades in the attached tabulation.

The number of machines includes only those machines for which idle time was reported during the month. It does not include the machines in 28 mills that were closed down completely for the month.

The total number of machines may include duplications because the reports may count the same machine twice, if idle for different reasons during the different parts of the month or if idle part of the time on one grade and part of the time on another.

The reasons tabulated for lost time are "lack of orders" and "repairs." "Other reasons" include "lack of material," "lack of water power," etc.

The time lost in May, 1921, is given by grades and reasons for purposes of comparison.

	Lack of Orders		Repairs		Other Reasons		Total	
	1922	1921	1922	1921	1922	1921	1922	1921
News Print:								
Number machines	12	16	2	6	4	15	18	37
Total hours idle	2,416	3,194	118	676	312	4,968	2,846	8,838
Book Paper:								
Number of machines	87	122	30	19	25	12	142	153
Total hours idle	9,961	28,567	1,159	3,387	921	1,048	12,041	33,002
Paperboard:								
Number of machines	115	189	32	29	82	62	229	280
Total hours idle	23,450	46,314	3,759	3,080	15,132	18,012	42,341	67,406
Wrapping:								
Number of machines	48	99	21	25	47	38	116	162
Total hours idle	7,211	13,809	1,722	2,703	5,674	6,573	14,607	23,085
Bag:								
Number of machines	10	7	15	2	12	14	37	23
Total hours idle	1,074	796	941	281	390	3,600	2,405	4,677
Fine:								
Number of Machines	75	104	43	23	42	17	160	144
Total hours idle	11,539	36,956	6,234	7,433	3,063	2,710	20,836	47,099
Tissue:								
Number of machines	53	66	27	19	25	18	105	103
Total hours idle	8,395	14,781	2,050	2,978	4,697	2,233	15,142	19,992
Hanging:								
Number of machines	7	6	1	5	1	1	9	12
Total hours idle	744	1,616	35	236	156	173	935	2,025
Felts and Building:								
Number of machines	25	33	9	9	13	5	47	47
Total hours idle	5,171	5,925	354	1,232	1,169	949	6,694	8,106
Other Grades:								
Number of machines	41	49	19	11	24	10	84	70
Total hours idle	5,584	9,575	1,444	1,033	4,018	1,556	11,046	12,164
Total number of machines	473	691	199	148	275	192	947	1,031
Total hours idle	75,545	161,533	17,816	23,039	35,532	41,822	128,893	226,394

Further Action Against Casein Duty

The efforts of the coated paper manufacturers of the United States to prevent the imposition of the proposed prohibitive tariff of 4 cents per pound on casein are meeting with support from other industries which are affected, even though in smaller degree, by the proposed tariff.

At a meeting of the special committee which, representing the coated paper manufacturers, prepared and filed the recent brief against the tariff on casein, it was reported that briefs have also been filed by the National Paper Trade Association, the National Association of Book Publishers, and the Plywood Manufacturers Association. In addition several other industries are considering action, and some are already taking up the matter informally with the members of the Senate Finance Committee. Still another brief was that filed by the National Association of Stationers and Manufacturers. The National Association of Publishers has also taken action, its brief showing the effect of such a coated duty on the magazine publishers.

Replies to some of these briefs from various senators indicate that the duty will be opposed by some of the leading members of the Senate, when the matter comes to final decision.

XUM

SUMMER QUIETUDE APPARENT IN PHILADELPHIA MARKET

National Holiday Also Interrupts Business—All the Indications, However, Point to a Continued Betterment in the Situation—Chas. Beck Paper Co. Named as Co-distributor with the D. L. Ward Co., for the S. D. Warren Co.'s Line of Printing Papers—Fine Paper Division of the Philadelphia Paper Trade Association Meets and Discusses Market Conditions.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 3, 1922.—The increase in the "spotty" conditions in the fine paper market during the week was attributed by all the distributors to the transient influences of the advent of the usually dull summer season, but particularly to the National holiday. Because the Nation's birthday falls tomorrow all the fine paper distributors yielded to the suggestions of their employees—and of their executives as well—to close down all day today, thus giving the business family a holiday from Saturday noon until Wednesday morning. To a large extent the printing industry of the city did the same, this cessation from activity not meaning very much to the proprietors because their business too it rather quiet. However, the rule was not so generally observed among the patrons of the fine paper houses as it was by the paper distributors. For this reason the days of last week were of a most varied character, some of them being periods of real rushing activity while others almost were flat, reflecting the condition of affairs in the printing business where orders had to be rushed to completion before the "Glorious Fourth" suspension or where business was deferred until after that occasion. On the whole the week's experience was quite a satisfactory one, save to the most optimistic. Even on the dull days there was nothing to alarm because it was clearly evident that they were due to circumstances that were easily explained.

The coarse paper dealers generally are not in quite so well content a frame of mind as are the fine paper distributors because in this market the certainty of future increase of business is not as great. This trade leans to a very large extent upon the requirements of the textile industry which is centralized here, and the conditions in that trade are far from being stabilized. In a general way its paper requirements thus far have fallen considerably short of what was anticipated.

Continued Improvement in Paper Stock

Recent gains in the paper stock market have been continuous, but the improvement of the week was not particularly noteworthy. Hard whites still continue to accumulate in the warehouses of the jobbers because there is no mill demand for them and trade prefers to store them against a better market, rather than to make effort to move them by any price reductions. All the other grades are moving into the mills, out of town to a larger extent than in town, just about as fast as they are being gathered together.

Collections Said to Be Slow

The nearest approach to a real complaint voiced by the fine paper distributors, is the slowness of collection from the printers and publishers and their disposition to shop around whenever there is a quantity purchase to be made, in the hope of securing special consideration and price concession. There are not a few in the trade who say that the paper men themselves are responsible for this objectionable condition because by their own actions they have whetted the appetite of purchasing agents for special consideration. While price lists strictly are observed by virtually all the houses on stock business, it is admitted that a considerable amount of price slashing, or perhaps it would be more near the truth to say price trimming, is being indulged in. Specific instances were given of sales managers and executives who for the sake of setting an example to their sales organizations in getting business, personally have gone among the consumers and have brought back goodly sized orders. Of course they did not broadcast the information that these orders had been secured by paring down quotations.

Additional Distribution for Warren Line

The development of most widespread interest and greatest importance in the fine paper division of the trade was the appointment of the Chas. Beck Paper Company as co-distributor with the D. L. Ward Company for the S. D. Warren line of printing papers, regarded everywhere as one of the most desirable in the market. The intimation in these columns a week ago that the appointment of a dual agent for the Warren line was imminent, was verified at the close of last week when the following formal announcement was sent out by the S. D. Warren Company:

"In order that the market for Warren's standard printing papers can be more completely developed, it has been deemed advisable to increase the channels of distribution in the Metropolitan centers. To this additional connections have already been made in New York, Chicago and St. Louis.

"For a number of years the D. L. Ward Company have been the sole distributor of our printing papers in the Philadelphia district. In the future, however, they will be assisted in serving that market by Chas. Beck Company."

Appointment of the Beck Company as the co-distributor had been rumored for some time, but its officials would say nothing in confirmation. However, about the middle of the week, the observant saw several carloads of Warren papers unloaded on the Beck pavement in Ranstead street, and then rumor became verified. It was followed later on by the formal announcement. It is understood in trade circles that the applications by Philadelphia firms for the Warren line were quite general and that some time ago there came to the city Jesse W. Clarke, field representative, and Roger D. Smith, sales manager, of the Warren Company, who made the selection of the Beck firm.

Fine Paper Division Meets

The meeting on Thursday morning last of the Fine Paper Division of the Philadelphia Paper Trade Association was given over entirely to a discussion of market conditions, actual and prospective, on the satisfactory character of which there was unanimity of view, as there was, too, on the entirely satisfactory and pleasing manner in which the agreement recently entered into by the Paper Trade Association and the Typothetæ of Philadelphia is working out. While the agreement had to be intepreted in hundreds of cases to fit their peculiar conditions, it was said that in every case Chairman William Sharpless, of the Typothetæ Trades Relations Committee, had ruled in a broad-minded and equitable manner, having won such confidence from the paper trade that records of all sales transactions with certain firms freely have been laid before him. The spirit of the meeting was that the paper distributors should continue to be entirely frank and to be scrupulously careful to see that on their part the slightest detail of the agreement should be lived up to. In view of the harmonious relations now existing between the paper distributors and the printing industry, and which never before in long history have been equalled, the paper trade proposes in the near future to lay before the printers other matters in their relationship, and particularly the small order business now done at a great loss, the solution of which it is felt will be as advantageous to the printers as to the paper men.

Paper Men and Printers Play Golf

While the golf tournament held during the week between the members of the Philadelphia Paper Trade Golf Association, which has

(*Continued on page 22*)

XUM

A New Sulphite for Book Mills!

M D
L

CLEAN

GOOD STRENGTH HIGH COLOR

UNBLEACHED SULPHITE

Made by the MO och DOMSJÖ A.-B., STOCKHOLM, SWEDEN

This pulp contains all the necessary requirements demanded by Mills wanting an exceptionally high color, clean, strong sulphite

Wire us for Samples and Quotations
For Shipments over the Balance of the Year

A. J. PAGEL & CO., Inc.

347 Madison Avenue New York City

SUMMER QUIETUDE APPARENT IN PHILADELPHIA MARKET

(*Continued from page 20*)

no connection, however, with the trade association of closely similar name, and the printing and publishing trades of Philadelphia which are not yet organized in a golf association, was purely a sportsmanship contest, the fraternity developed will of course be beneficial in the consideration of the new problems which are to be discussed. The story of the golf tournament, in figures, is told herewith:

	Gross	Handicap	Net
J. Johnson	83	10	73
J. E. Eddy	100	27	73
C. F. Kindt, Sr.	92	15	77
R. Neal	85	8	77
H. Sorenson	86	8	79
C. S. Olmstead	95	17	78
H. F. Donahue	88	9	79
George Hoffner	79	0	79
G. A. B. Leitch	98	19	79
H. W. Haydock	98	18	80
C. F. Kindt, Jr.	88	8	80
W. P. Scott	93	13	80
W. S. Shantz	90	10	80
W. A. Jennens	94	13	81
P. L. Lewis	89	8	81
E. D. Stevens	87	6	81
H. E. Wheeler	94	13	81
E. W. Fry	96	14	82
G. A. Vasel	109	27	82
A. S. Jenkins	107	24	83
F. T. Burkhardt	97	13	84
J. Fraser	92	8	84
G. L. L. McGinley	92	8	84
S. A. Benedict	108	22	86
D. Lindsay, Jr.	102	16	86
F. W. Roberts	110	23	87
A. B. Sherrill	105	18	87
E. A. Weihenmayer	103	14	89
W. S. Wilcox	111	22	89
J. H. Lindsay	106	16	90
E. T. Walter, Jr.	120	30	90
C. C. Walden, Jr.	122	30	92
W. W. Seary	113	20	93
W. J. Boyd	114	18	96
L. A. Walden	130	30	100
W. F. Leonard	128	22	106
F. L. Bingham	144	30	114
D. L. Evans	134	20	114

Dinner Match

0	P. L. Lewis	1	E. D. Stevens
0	G. L. L. McGinley	1	C. F. Kindt, Jr.
0	H. F. Donahue	1	J. Johnson
0	C. W. Sutton	1	H. E. Wheeler
0	E. A. Weihenmayer	1	W. P. Scott
0	A. B. Sherrill	1	J. S. Potsdamer
0	W. S. Wilcox	1	C. S. Olmstead
0	G. A. Vasel	1	W. W. Seary
0	D. L. Evans	1	S. A. Benedict
0	J. Bevan	1	C. A. Stinson
0	E. T. Walter	1	L. A. Walden
0	F. L. Bingham	1	S. Walter
0	N. W. Fort	1	W. S. Shantz
0	C. C. Walden, Jr.	1	J. E. Eddy
1	George Hoffner	0	Hal Sorenson
1	J. Fraser	0	R. Neal
1	E. W. Fry	0	W. A. Jennens
1	W. H. George	0	J. M. Conover
1	F. T. Burkhardt	0	G. W. McDougal
1	R. H. Dippy	0	J. H. Lindsay
1	C. F. Kindt, Sr.	0	D. Lindsay, Jr.
1	I. F. Magargee	0	W. F. Leonard
1	G. A. B. Leitch	0	H. W. Haydock
1	F. W. Roberts	0	W. J. Boyd
1	A. S. Jenkins	0	A. F. Smith
1	J. A. Klepper	0	J. McIntyre

The contest was held on the links of the Philmont Country Club and was an all day affair, the dinner match being held in the morning, and the twosomes and foursomes in the afternoon. The results because of the excellent handicaps schedule were close, requiring indeed the flip of a coin to determine the first, second and third places. J. Johnson, of the Dunlap Printing Company, who tied with J. E. Eddy, of the Miehle Press, won first place because he called the fall of the coin and thereby became this year's cupholder, and also the permanent possessor of a silver coffee set. That decision gave Eddy second place and ownership of a silver pitcher. The tie for third place between C. F. Kindt, Sr., and R. L. Neal and, incidentally, title to a silver bread tray, remains to be solved. The Philadelphians received and accepted an invitation from their trade brethren in the paper and printing trades of New York, sent through C. C. Walden, Jr., to participate in a like tournament to be held in Gotham some time in August.

General Trade News

After a close down of more than a year, the Tulpehocken Mill, of the Reading Paper Mills Company at Reading, Pa., is about to be reopened. It is engaged exclusively in the production of unbleached rope fiber paper for sanding purposes. During the close down the machinery equipment has been overhauled and replacements made and a sprinkling system has been installed.

Officials of the Typothetæ of Philadelphia claim that the newly organized Waste Paper Division for the sale under a contract entered into with the Hemingway Company of the waste of the print shops of members of the division and which has been operating since early last month, is highly successful from the view points both of service to the printers and of prices for stock. There are now in the Waste Paper Division 35 printing firms and one of the largest paper houses holding membership in the Paper Trades Division of the Typothetæ.

Sales-manager Howard W. Taylor, of the Dill & Collins Company, is making a business trip as far as the Pacific Coast. Frederick E. Hastings, widely known in trade circles because of long connection with the company, is on a trip for recreation to Europe.

Thomas Gamble, Jr., of John Simmons' Sons, accompanied by John Lipsey, of the Whiting-Patterson Company, has left the city for a trip of inspection of the Western paper mills.

Vice-president Morgan H. Thomas, of the Garrett-Buchanan, has returned from an enjoyable vacation trip through the Yellowstone National Park.

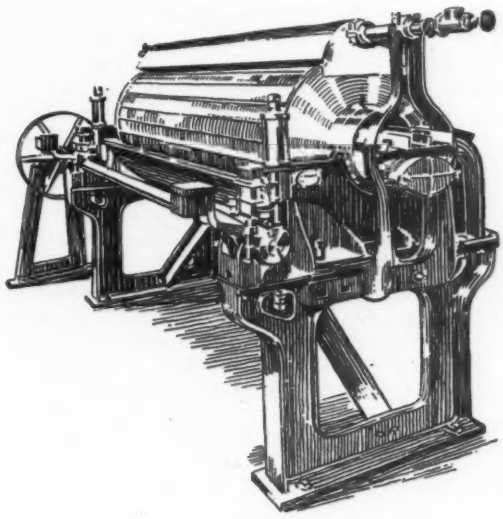
Paperboard Industry Reviving

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., July 3, 1922.—The three plants of the Canadian Paperboard Company, situated at Frankford, Campbellford, and Montreal, are now operating 24 hours a day.

The activity in the paperboard industry is a recognized trade barometer, indicating a significant improvement in the paper industry.

XUM



A Screen that Requires no Raking

One of the outstanding advantages of the WALPOLE SCREEN is that it requires no raking and little more than casual attention from the machine crew.

It is self-cleaning which means continuous production as there are no shut-downs for washing up. Uniform quality is maintained throughout the run as only clean stock is discharged.

If you are looking for a practical, trouble-proof screen for screening long-fibred, slow-working stocks, write for the Walpole Screen Bulletin.

BIRD MACHINE COMPANY

SOUTH WALPOLE MASSACHUSETTS

Western Representative:
T. H. Savery, Jr., 1718 Republic Bldg., Chicago, Ill.

Canadian Builders of Bird Machinery:
Canadian Ingersoll-Rand Co., Ltd., 260 St. James St., Montreal, Canada.

THE WALPOLE SCREEN

88-224

BEAVER BOARD COMPANIES TO REBUILD AT FRANKLIN

Work to Be Rushed as Speedily as Possible and It Is Expected That the New Plant Will Be in Operation Early in the Fall—Straw Paper and Board Manufacturers Look Forward to Abundant Crop of Straw—Arthur Nevius, General Manager of the Miami Paper Co. at West Carrollton, Returns from Eastern Trip—Paper Plants Closed Saturday Noon and Remained Closed Until Wednesday.

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, July 3, 1922.—Work was started today on the vulcanite roofing plant of the Beaver Board Companies at Franklin, preparatory to rebuilding the portion of the large mill burned on March 20 when a loss in excess of $250,000 was sustained.

For some time residents of this enterprising mill center have been apprehensive lest ownership of the mill would change greatly to the disadvantage of the town. However, by a deal just completed a number of Franklin investors have become interested in the plant and the rebuilding of the mill is assured.

By the arrangement the local holdings of the Beaver Board Companies were sold during the past week and will be transferred to a corporation. As yet the men interested are not known to the public as it is the desire of those investing in the enterprise that they remain in the background. However, it is known that the persons who are backing the industry are acquainted with the soundness of the paper industry and have witnessed the growth of similar business projects.

The newly-organized company will push the work of rebuilding the mill as speedily as possible. Men of practical experience will be placed in charge of construction work as well as the management and superintendency of the plant which under the arrangement becomes more and more a local enterprise.

A large force of men will be employed and citizens of Franklin are inclined to look upon the rebuilding of the mill as of great importance to the town as the American Rolling mills project is to Middletown, in a comparative sense. In other words, it will be the biggest industry in Franklin, in all likelihood, though there are some large paper and board plants there.

It is expected that the plant will be placed in operation by September 1, which means that the force employed today to remove the debris and begin reconstruction, will have to hustle.

Good Straw Crop Apparently Assured

Since last week, harvesting throughout the Miami Valley and Ohio has progressed to such an extent that straw paper and board manufacturers have no doubt they will secure as large a supply as will be needed in the industry in this immediate vicinity. Reports also from adjoining states are satisfactory.

Never before probably has there been an earlier harvest and it is estimated that one-half of the crop has been harvested by this time. For a time considerable alarm was felt with reference to the damage by pests.

T. H. Parks, entomologist of the Ohio State Extension Bureau, with M. D. Naude, an entomologist from South Africa, sent to Ohio by the British government to study American farming methods, joined the county agent in Miami county on a trip inspecting wheat for fly, joint worms and cinch bugs. They reported three per cent of the wheat infected with fly, two per cent with joint worms and enough cinch bugs to do considerable damage to adjoining corn fields. The investigators reported the percentage to be about the same as found in other counties of Ohio, hence the straw men may approximate about the total damage from these sources. Some smut also was reported.

It is claimed the fly can be controlled by late sowing of wheat and county agents already are urging that this plan be adopted in the future.

The Ohio crop is estimated at 42,798,000 bushels.

Arthur Nevius Returns

Arthur H. Nevius, general manager of the Miami Paper Company, West Carrollton, accompanied by Mrs. Nevius, arrived home today from an extended motor tour of the East. The trip was made mostly for pleasure and was enjoyable, scenic routes having been chosen.

Paper Plants Closed for Holidays

Owing to the Independence Day holiday, some of the valley plants closed Saturday noon and will remain closed until Wednesday. Hamilton, Middletown, Franklin, Lockland, Piqua, Dayton, Tippecanoe City and other mill towns had unique Fourth celebrations. Business generally was suspended. Middletown and Hamilton paper mill teams contested on the diamond. In Dayton aquatic sports on the Miami and Stillwater rivers were witnessed by 30,000 people.

Frank L. Moore's Services in Demand

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., July 3, 1922.—The services of Frank L. Moore, former president of the Newton Falls Paper Company, seem to be greatly in demand just now. If reports are true he is in a position to accept any one of several flattering propositions. He is now out of the city and cannot be reached for an interview, but before leaving for Montreal he did admit that he had some propositions under consideration and that he would probably close a deal of some kind.

It is believed that Mr. Moore will become the head of the Carthage Sulphite Pulp and Paper Company, succeeding the late James A. Outterson. He brought the Newton Falls company out of a precarious position and rebuilt the mill besides giving the stockholders a nice profit, and it is believed that he would install ideas that would result in giving the Carthage concern greater success.

Mr. Moore is said to have been offered the active head of the Riordan Pulp and Paper Company of Canada. It is understood that this concern has been in difficulties for some time and the creditors and stockholders are said to feel that Mr. Moore would be the man to rehabilitate the company.

These are not the only propositions confronting Mr. Moore. It is said that a concern in the West and also one in the South have been in communication with him relative to acquiring his services. There is a feeling among paper manufacturers here that when the decision is announced it will be found that Mr. Moore will go to the Carthage company.

Spanish River Meeting

[FROM OUR REGULAR CORRESPONDENT.]

MONTREAL, Que., July 3, 1922.—The directors of the Spanish River Pulp and Paper Mills, Limited, at a meeting in Montreal, declared the regular dividend of 1¾ per cent on both common and deferred shares for the current quarter, payable July 15. The declaration of this devidend has had a reassuring effect on investors in pulp and paper issues. The company's year ended June 30, and the directors therefore know about what the company's forthcoming annual statement will show. After the meeting, George H. Mead, the president, stated that he regarded the trend of the entire pulp and paper industry encouraging.

XUM

Changing Horses

In the Middle of the Stream
Like
Changing Hands on the Sheet
When putting it on the Reel.

The Beloit Uniform Speed Reel

Eliminates a condition existing on every other hand fed reel in existence.

Ask Us.

BELOIT IRON WORKS
BELOIT, WISCONSIN

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PAPER TRADE IN CHICAGO OPTIMISTIC FOR FUTURE

While It Is Believed That Business for July and August Will Not Be Heavy, September, It Is Believed, Will Come in Strong—Improvement in the Coarse Paper Division of the Market Is Becoming More Noticeable—Beaver Product Co., Inc., Offering Gold Bonds Through the Central Trust Co. of Illinois—Corrugated and Fiber Box Manufacturers to Meet at Atlantic City.

[FROM OUR REGULAR CORRESPONDENT.]

CHICAGO, July 3, 1922.—For some of the paper houses in Chicago June is said to have shown an increase in business over May. These houses which have reported an increase are very optimistic and feel certain, that while business during the summer months, July and August, will probably not be real heavy, September will come in strong, with a volume of orders for the increased business now being anticipated by business houses in general.

In the wrapping and course paper division of the local industry the report is to the effect that business is beginning to gather strength. A few weeks ago, one member of this branch of the trade said that business was the worst he had ever seen it. This house carries tissues as well, and said at that time, that towels and napkins were not moving at all.

A movement of slight proportions is now being reported from this same source.

The fine paper dealers declare that the printers are getting a little more work and this means more paper to be sold. However, these paper merchants do not look for any volume business for at least another month or six weeks, when they expect to see an opening up of advertising of all kinds and a good demand for fine papers for that purpose.

In the board lines business has been going along pretty fair, it is said. Prices are said to be firm and fairly steady just now, and there is a demand from certain branches of the paper box industry which seems to be sufficient to uphold the present trend. There is some talk of higher markets later this summer and fall.

Beaver Products Co. Offers Gold Bonds

The 20-year, 7½ per cent sinking fund gold bonds, of the Beaver Products Company, Inc., of Buffalo, are being offered to the Chicago public through the Central Trust Company of Illinois. The issue is $3,000,000 of the total authorized issue of $4,000,000, the purpose of which has been explained to pay off the indebtedness of the former Beaver Board Company and increase the working capital of the new company. The new company will acquire all properties formerly operated by the Beaver Board Company, increasing 17 plants in United States, and 5 subsidiary plants in Canada. The net current assets of the company are said to be $4,741,990 which is about 120 per cent of the bonded debt. The company's fixed assets, including those of the Canadian subsidiaries have been appraised at over $13,000,000.

The floating of these bonds is being done under the reorganization plan of the company, which was recently in a financially embarrassing position. The reorganization took place to keep the company out of the bankrupt courts. It is now said to be felt that the future of the company is insured under this refinancing program.

Fiber Box Men to Meet at Atlantic City

The annual meeting and election of officers of the National Association of Corrugated and Fibre Box Manufacturers will be held at Atlantic City, N. J., July 18, 19 and 20, at the Hotel Traymore.

Secretary-Treasurer, B. C. Tamlin, with offices in Chicago, has announced that a large attendance is expected. Reservations have been made by many of the members intending to attend.

Several matters of importance to the organization are to be brought up at this meeting aside from the annual election of officers.

Officers of the association whose terms will come to a close at the meeting are: President F. J. Kress, F. J. Kress Paper Box Company, Pittsburgh, Pa.; Vice-President T. D. Griley, Fairfield Paper Company, Baltimore, Md.; Vice-President J. M. Connor, The Fibre Container Company, of Pennsylvania, Philadelphia.

A report will be made at the meeting by President Kress on the annual meeting of the Chamber of Commerce of the United States; F. D. Wilson, research director, will make his annual report covering recent findings in his work. Other reports, covering the activities of the organization for the past year, new members, and some of the things intended to be accomplished during the coming fiscal years, will be brought up.

General News of the Trade

The Fibre Container Supply Association of which S. G. Leitch of Troy, Ohio, is president, C. D. Woods, Cleveland, vice-president and N. F. Rehm, Chicago, secretary, will hold its next meeting at Atlantic City, July 18, 19, 20, at the same time as the National Association of Corrugated and Fibre Box Manufacturers' annual convention. This organization, made up of supply men to the Fibre Container trade, is making a drive for members. The membership fees are $10 and the annual dues are the same.

A new paper company with a capital of $50,000 was recently opened at 15-79 Chambers street, Galesburg, Ill. The company opened under the style, Hartong-Manning Paper Company, the purpose being to manufacture and deal in paper products. P. A. Manning, Fred Larson and Fred W. Hartong are the incorporators.

Announcement coming from Springfield, Ill., states that the Midwest Paper Company, of Chicago, has decreased its capital stock from $300,000 to $200,000.

The Excelsior Paper Company was recently incorporated to do a jobbing paper business in Chicago. On July 1, this company changed its name from that of the original charter to the Levin Brothers Paper Company.

The Beaver Paper Company of Chicago, recently leased a three-story and basement building at 1219 West Lake street. The lease was for a term of 5 years at a term rental of $15,000. The building is 25 by 120 feet.

Paper Man Makes Big Hospital Gift

[FROM OUR REGULAR CORRESPONDENT]

SPRINGFIELD, Mass., July 1, 1922.—Horace A. Moses, president of the Strathmore Paper Company, of Mittineague and Woronoco, is bearing half the cost of the new $150,000 Moses-Ludington Hospital building which the E. F. Carlson Company of this city is erecting in Ticonderoga, N. Y. It is due to the liberality of Mr. Moses, a native of Ticonderoga, who has never lost his love for his home town, that the people of Ticonderoga and the section are to have this fine and thoroughly up-to-date hospital.

C. G. Schrodt Co. Removes to Albany

[FROM OUR REGULAR CORRESPONDENT]

COHOES, N. Y., July 3, 1922.—The C. G. Schrodt Stationery Company has removed to Albany where it occupies a building 400 feet long in which it has installed sufficient machinery to triple its capacity. The company manufactures writing tablets, pencil tablets composition books, note books, desk pads and papeteries.

The company started business in 1918 and has been meeting with rapid success.

XUM

FOR QUALITY PAPERS USE

A-1 BLEACHED SULPHITE PULP

MANUFACTURED BY

Kellner-Partington Paper Pulp Co., Ltd.

Borregaard **Norway**

SOLE AGENTS FOR U. S.

J. Andersen & Co.

21 East 40th Street **New York, N. Y.**

WAYAGAMACK

KRAFT PULP

Uniform in Quality
Essential for Strength Requirement

The Pulp and Paper Trading Company

21 East 40th St., New York, N. Y.

Sole Agents for United States for

CANADIAN KRAFT, Ltd. **Three Rivers, Canada**

New York Trade Jottings

M. B. Littlefield, engineer of the Arrowhead Mills, Inc., of Fulton, New York, was among the New York trade visitors during the past week.

* * *

L. R. Spencer, formerly connected with the Marathon Paper Mills and the Paul Sorg Company, was among the trade visitors in New York last week.

* * *

H. H. Fish, of Omaha, Nebr., and president of the Great Western Paper Company, Ladysmith, Wis., was in New York on business shortly before the holidays.

* * *

R. M. Porter, secretary-treasurer of the Woodlands Section of the American Paper and Pulp Association returned Wednesday of this week from a two weeks' vacation in Massachusetts.

* * *

H. W. Stokes, of the York Haven Paper Company, 906 Land Title Building, Philadelphia, and former president of the Pulp Manufacturers' Association, was a New York trade visitor last week.

* * *

Charles W. Bell, consulting specialist on paper boards, of 1047 Grand avenue, Dayton, Ohio, arrived in New York last week accompanied by his daughter, making the trip from Dayton in his automobile.

* * *

W. J. Raybold, president of the American Paper and Pulp Association, visited the offices of the Association, 18 E. 41st street, after his trip to Washington. Mr. Raybold discussed the continuation of plans in behalf of the tariff schedule as it is now written.

* * *

R. S. Kellogg, secretary of the News Print Service Bureau, is expected to return from his combined business and pleasure tour of the lake states, in which he has been accompanied by his family, the latter part of this week. Mr. Kellogg has spent some time camping in Northern Wisconsin and is, at the same time, making a survey of paper mills in this region.

* * *

Thos. O. Ross, of the Hummel-Ross Company, Hopewell, Va., and president of the Pulp Manufacturers' Association, visited the offices of the American Paper and Pulp Association last week following his trip to Washington on tariff matters. Mr. Ross checked up on the reorganization of the Pulp Manufacturers' Association and was greatly pleased with the way it had been effected without any serious loss in membership.

* * *

D. J. McLaurin, vice-president of the New York district of the Salesmen's Association, held a conference with Warren B. Bullock, publicity director of the American Paper and Pulp Association on Monday, July 3, regarding plans for the annual salesmen's outing to be held at Melville, Long Island, July 12. Mr. McLaurin has spared no effort to provide an elaborate entertainment for the occasion and has even succeeded in chartering an aeroplane in which members will be given free flights. According to Mr. Bullock there have been a number of replies to the invitations sent out and the outing promises to be a unique success.

Wrong Report from Stockholm

[FROM OUR REGULAR CORRESPONDENT.]

MONTREAL, Que., July 3, 1922.—Considerable surprise was occasioned here this week by the publication of a cable from Stockholm stating that through an official of the Canadian Export Paper Company arrangements had been made for the marketing of the whole output of the Scandinavian pulp and paper mills in New York. The report turned out to be grossly in error. In the first place, the Canadian Export Paper Company is concerned wholly with the marketing of Canadian pulp and paper, and would hardly be likely to be a party to the fostering of competition with foreign products. In the second place, the idea of marketing the whole output of Scandinavian mills in the United States is palpably absurd. It appears that what has happened is that George F. Steele, who was formerly general manager of the Canadian Export Paper Company, but who left that organization some time ago, has been on a visit to Scandinavia, and it is stated that he has secured the representation of one or two of the mills in New York.

Saguenay Profits are Lower

[FROM OUR REGULAR CORRESPONDENT.]

MONTREAL, Que., July 3, 1922.—At a meeting of the shareholders of the Saguenay Pulp and Power Company, held in Montreal, the new financing arrangements were approved. Senator Beique, the chairman, announced that of the $6,400,000 collateral trust bonds projected, $3,200,000 had been underwritten, and will be issued forthwith. The annual report, covering the fiscal year ended December 31 last, showed that gross earnings dropped from $8,989,238 in 1920 to $5,882,138, and after various charges and adjustments total income showed a decline from $3,818,353 a year ago to $2,433,073. After interest, depreciation, reserve, and inventory had been written off, the latter being a new item, and amounting to $528,652, net profit amounted to only $64,981, as compared with $1,368,373 during 1920, before provision for income taxes in both cases. The former board of directors was re-elected.

J. H. Wright Handling Paper Mill Supplies

KALAMAZOO, Mich., July 3, 1922.—James H. Wright, formerly sales manager of the Bryant Paper Co., is now engaged in handling a general line of papers and paper mill supplies, covering all territory west of Buffalo and westward to the Pacific coast. Mr. Wright styles himself manufacturer's agent. His new duties require a large amount of traveling.

One of his desirable lines is the product of the William Cabble Excelsior Wire Manufacturing Company, Brooklyn, N. Y. Other specialties are also included.

"I shall aim to make desirable connections only," said Mr. Wright, "confining my efforts to supplies of recognized worth. I have already been able to place several orders for paper that will result later in much enhanced trade along that line."

Mr. Wright is favored with a wide acquaintance in the paper industry and will readily build up a large clientele.

Woodlands Section Summer Meeting

[FROM OUR REGULAR CORRESPONDENT.]

MONTREAL, Que., July 3, 1922.—Arrangements have been made to hold the summer meeting of the Woodlands Section of the Canadian Pulp and Paper Association, July 17-20. The meeting will take the form of an automobile tour of the Adirondack region, with visits to the Delaware and Hudson plantation, the State plantations en route to Saranac Lake, the State nursery at Lake Clear, the plant and hardwood opertions of the Oakwood Dish Company, the State lookout tower near Chesterton, and the New York State nurseries at Saratoga Springs. The automobiles will leave the Ritz Carlton Hotel on Monday, July 17, at 8 A. M., and return to Montreal on Friday, July 21.

XUM

Niagara Beaters Do Save Power

Cutting 43% in power consumption—that is the record made by one user of Niagara beaters. The figures produced below give full details. This papermaker is producing as much with one Niagara as was formerly turned out in two Holland engines.

True—the one Niagara required a larger motor than either of the old beaters, but so great is the speed of Niagara that *the HP. hours used per ton of stock produced is materially less.* Other savings besides power alone result in the use of Niagara beaters and a better paper can be made. Let us send you full particulars.

Valley Iron Works Co.

***Plant*—Appleton, Wis.**

***New York Office*—350 Madison Ave.**

Here is the PROOF—

A Saving of 43 Percent

Furnish: Ground Wood and Bleached Sulphite for Book Papers.

Power Installed: 100 HP. for 1—2000 lb. Niagara beater; 150 HP. for 2—2000 lb. Holland beater

	2000 lbs. Niagara			2000 lbs. Holland		
Operation	Time in Hours	Power in HP.	Consump. in HP. Hours	Time in Hours	Power in HP.	Consump. in HP. Hours
Furnishing	¼	60	15	5/12	40	17
Beating	1/5	100	20	7/12	70	41
Emptying	1/20	80	4	¼	45	11
Total	½		39	1¼		69
	39 HP. hr. used per ton of Stock produced			69 HP. hr. used per ton of Stock produced		

Saving— $\frac{69-39}{69}$ = 43% Saving in Total Power Consumption.

Recent Incorporations

FIBREBOARD SALES COMPANY, Amesbury, Massachusetts; leather and fibreboard. Capital, $100,000. Incorporators, Chauncey D. Parker, of Boston; Bowen Tufts, of Hull ; Edward L. Bennett, of Cambridge, and Edward C. Mason, of Winchester.

STEVENS & THOMPSON PAPER COMPANY.—Formed by consolidation of Stevens & Thompson, Stevens & Thompson Paper Company and The Walloomsac Paper Company. Capital, $1,500,000. Incorporator: Frank L. Stevens, North Hoosick, New York.

THE EATON, CRANE & PIKE COMPANY, Pittsfield, Massachusetts. Capital stock being $3,500,000. Incorporators are Arthur W. Eaton and William H. Eaton of this city; Max Rackemann, of Milton; Harrison M. Davis, of Salem; Ralph Dunbar, of Brookline, and David F. Sibley, of Boston.

News of the Boston Trade

BOSTON, Mass., July 3, 1922.—Three large Boston paper houses, John Carter & Co., 595 Atlantic avenue; Arnold-Roberts Company, 180 Congress street; and Whitaker Paper Company, 127 Federal street, are conducting an intensive selling campaign on watermarked lines of the American Writing Paper Company. Max Frank, of John Carter & Co., in explaining the campaign being conducted by his firm along the above line stated that they had always carried the American Writing Paper Company goods including the special lines so that now with the intensive campaign in progress there were orders coming in all of the time.

Many Boston and New England paper salesmen are making their plans to attend the annual summer outing of the Salesmen's Association which will be held at Malba, Long Island, Monday, July 12. All sorts of field sports, such as golf, tennis, baseball and bathing have been arranged. A hydroplane will be in attendance to take the members for a ride over the Long Island country, either on the water or in the air.

By a vote of the executive committee of the New England Paper Merchants' Association and with the general assent of the members the paper houses in Boston were not open for business on Monday, July 3, thus giving their men a holiday from Saturday, July 1, at 1 P. M., until Wednesday morning, July 5, and a chance to get a real vacation over the extended week-end.

John Carter & Co. notified all of their customers that their warehouse would be closed on Monday and Tuesday and that the company as well as the other paper houses in the city would be closed on those two days, remaining closed from Saturday at 1 P. M. until Wednesday morning. In this notice they urged their customers who desired orders shipped out before Saturday to send them in early enough to allow ample time for shipment.

Stevens & Thompson Paper Co. Merger

The following notice which explains itself has just been sent to the trade:

"We wish to announce that we have today made effective a consolidation of our three mills, which have heretofore been incorporated separately. We believe this change will enable us to give more efficient service to those who entrust any of their business to our care.

"All communications relating to any of our mills should be addressed to the new company, Stevens & Thompson Paper Company, North Hoosick, N. Y.

STEVENS & THOMPSON, WALLOOMSAC PAPER COMPANY,
STEVENS & THOMPSON PAPER COMPANY.

Obituary

P. F. Griffin

FORT WAYNE, Ind., July 1, 1922.—P. F. Griffin, secretary and general manager of the Fort Wayne Corrugated Paper Company, with mills at Hartford City and Vincennes and general offices at Fort Wayne, died suddenly Wednesday, June 21, from a stroke of apoplexy.

Mr. Griffin had been in poor health for the past two years, but was feeling well on the morning of the day he died, so the end came as a particularly severe shock to his associates.

Bids and Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 5, 1922.—The purchasing officer of the Government Printing Office has received the following paper bids:

10,000 lbs. 33 x 33—100 Rope Manila Paper: Maurice O'Meara Company at $.095 per pound; Dobler & Mudge, $.1097 and The Whitaker Paper Company, $.085.

40,000 lbs. No. 2, 25 x 30—No. 18 Binder's Board: Philip Rudolph & Son, Inc., at $70.00 per ton; Dobler & Mudge, $68.90; Dennison-Pratt Paper Company, $60.00; The Whitaker Paper Company, $78.90; R. P. Andrews Paper Company, $81.00.

3,700 lbs. 24 x 38—74 Rope Manila Paper: Reese & Reese, at $.09045 and Dobler & Mudge, $.1099.

700 yds. White Tag Cloth, 36" wide: R. P. Andrews Paper Company, at $.15 per yard; Knickerbocker Supply Company, $.1897; J. H. Weil & Co., $.19; Williams, Brown & Earle, Inc., $.20.

The purchasing officers will open bids on July 7 for

8,000 lbs. (6 reams) 36 x 48" Gray Pressboard,

4,100 lbs. (200 reams) 17 x 28—20½, White Glazed Bond Paper

and on July 10 for

7,200 lbs. (150 reams) 20 x 25, Rough Cover Paper, Sample A,

14,400 lbs. (300 reams) 20 x 25 Rough Cover Paper, Sample B,

17,600 lbs. (350 reams) 20½ x 29—50 White Laid Antique Printing Paper.

The purchasing officer of the Government Printing Office will open bids on July 10 for 50,000 lbs. (50,000 sheets) of 26 x 38", No. 50, chip board.

Reese & Reese have been awarded the contract by the Purchasing Officer of the Government Printing Office for furnishing 5,850 pounds (50 reams) of 40 x 42—117 rope manilla paper at $.0912 per pound, bids for which were opened on June 23.

Fillmore & Slade have been awarded the contract by the Bureau of Supplies and Accounts, Navy Department, for furnishing 117,000 rolls of toilet paper for various Navy Yards at $10,896. The same firm will also furnish 100,000 rolls for the Mare Island Navy Yard at $10,035. Bids for these items were opened on June 27.

The Whitaker Paper Company has been awarded the contract by the Purchasing Officer of the Government Printing Office for furnishing 2,190 lbs. of 21 x 32½—109½ No. 60 salmon commercial ledger paper at $.198 per pound, bids for which were opened on June 23.

Linton & Co. to Represent Columbia Bag Co.

Linton & Co. have been appointed selling agents by the Columbia Paper Bag Company, of Long Island City, N. Y., for firm's complete line of grocery bags, self opening, squares and flats, in all territories West from the Eastern end of Ohio, and South to the Gulf. Stock for the convenience of customers will be carried at Chicago for quick shipment.

XUM

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mechanically eliminate oil and water from exhaust steam,—thus conserving the strength and serviceability of the boiler.

We are manufacturers of about 20,000 articles, including valves, pipe fittings, and steam specialties, made of brass, iron, ferrosteel, cast steel and forged steel, in all sizes, for all pressures and all purposes, and are distributors through the trade, of pipe, heating and plumbing materials.

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XUM

DIGESTION OF TYPHA DOMINGENSIS*

By Emil Heuser and Jan Haugerod

Typha domingensis occurs in North America, the West Indies, Central America and South America, especially in Guiana, Brazil, Argentine Republic and Peru. The plant is closely related to *Typha angustifolia* (occurring in Germany). *Typha domingensis* grows to a height of 4 meters; it, with *Typha elephantia*, is the tallest of the typhas. Because of the broad flat leaves, it may also be considered as a variety of *Typha latifolia*, which also occurs in Germany.

The raw material used in the following experiments consisted of the stems and leaves of the plant. These came air dried and were cut up before using.

In order to have comparative figures to use in determining the value of various cooks, the crude fiber was analyzed. Cellulose was determined by the method of Cross and Bevan. Treatment of the finely divided moistened product with chlorine gas transformed the lignin materials into chlorides, which may be washed out with sodium sulphite solution. Upon chlorination the grass was colored a deep yellow, similar to other lignin-containing materials; treatment of the chlorinated fiber with sodium sulphite solution changed the color to a light reddish-brown—a reaction which serves for the recognition of other lignified cellulose raw materials. A series of other reactions indicated that the grass contained lignin; thus, Maule's reaction, the red coloration with phlorglucinol hydrochloric acid and the dark brown color with concentrated sulphuric acid. The formation of considerable amounts of furfural upon the distillation of the raw material with 12 per cent hydrochloric acid, indicated the presence of pentosans. The strength of this reaction decreased with the time of chlorination or disappeared entirely. But even after 14 hours' action of chlorine, the color with sodium sulphite was still noticeable, and this might be used as a method of determining the end of the reaction. After this treatment, the grass showed a content of 45.1 per cent cellulose. Since the pentosan content of this product was not determined, it must be considered as "crude cellulose." This was white and showed slightly glistening fibers.

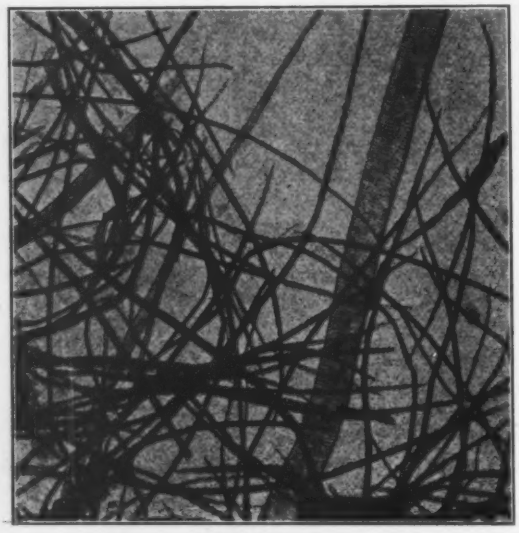


Fig. 1
Bast Fibers.

*Translated by Clarence J. West, Chairman, Committee of Bibliography, Tappi. From Der Papier-Fabrikant, March 5, 1922.

The moisture content, determined simultaneously, showed 10.58 per cent of water. The ash content was found to be 4.09 per cent, and the silica content, 0.1122 per cent, based upon the air-dried sample. The low content of silica indicates the possibility of digestion with sulphite liquors, but the relatively hgh ash content would argue against this method. Waxes and fats were determined by extraction in a Soxhlet apparatus of 3 to 5 grams of grass with

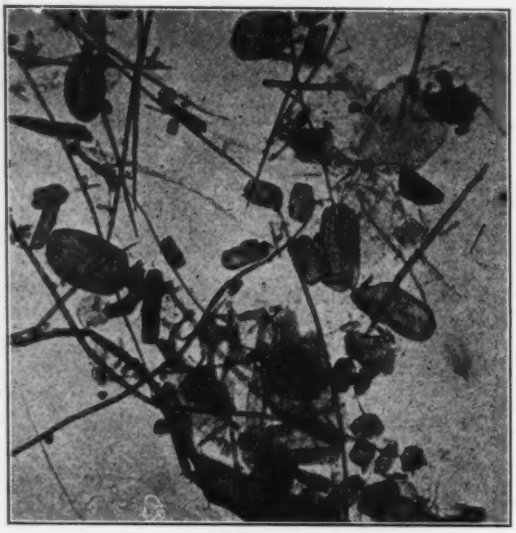


Fig. 2
Lignified Sack Cells.

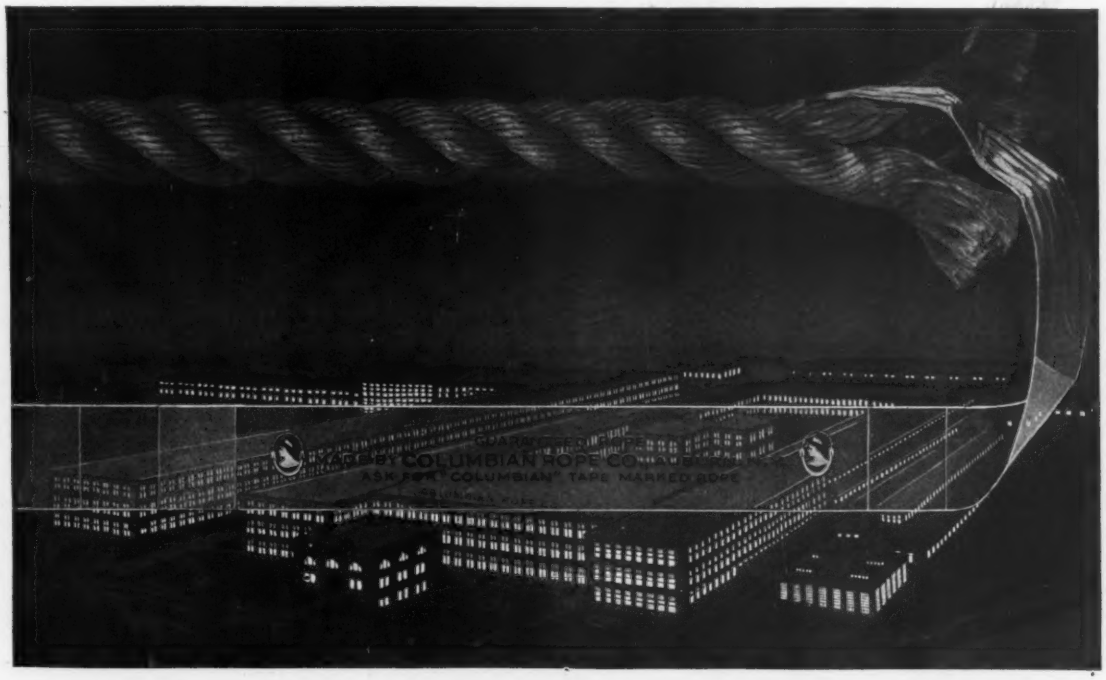
200 to 250 cc. 96 per cent alcohol for 5 hours and then extracting the residue under the same conditions with ether. The alcohol extract was 8.28 per cent, the ether extract 1.19 per cent, or a total of 9.47 per cent waxes and fats. The "wood gum content," that is, the part of the grass soluble in alkalies or in alkaline sulphides, was determined by boiling with pure sodium sulphide solution (1 : 4) for a quarter of an hour, filtering and washing the residue. The residue from this treatment was 55.69 per cent or 44.31 per cent has dissolved. This solubility is very considerable; probably it is due to the large amount of medullary substance present in the grass, which fills the inner portion of the stem. This substance easily dissolves in strong alkalies, while the external fibrous part remains unchanged. The expression "wood gum" has, therefore, little significance in this connection; it is retained only for purposes of comparison. The pentosan content of the grass was determined by the method of Tollens and Kröber. The value found was 18.25 per cent, which is from 5 to 8 per cent higher than the values for the cereal straws.

Assembling the values for the grass we have:

	Per Cent
Crude cellulose	45.10
Ash	4.09
Silica	0.112
Waxes and fats	9.47
Wood gum	44.31
Pentosans	18.25

Cooking with Lime

High yields and the possibility of mechanically working the



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There is a real significance to the red, white and blue *Tape-Marker,* which can be found in one strand throughout the entire length of every Columbian *Tape - Marked* Pure Manila Rope.

It has a broader meaning than merely a mark of identification. It means that the manufacturers stand behind every rope containing this Marker, because they know that it has proved, and is proving worthy of such confidence.

By means of this *Tape-Marker,* a permanent connection is established between the Company and its product, which is a protection to the dealer, and an infallible guarantee to the ultimate user.

Mr. Dealer—Insist on getting guaranteed Columbian *Tape-Marked* Rope. There is a jobber in your vicinity.

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cooked pulp into half-stoff, led to cooking the grass with lime. The following conditions were found most suitable: The grass is cooked in a stationary (not rotatory, because the grass balls together) three hours at 2 to 3 atmospheres pressure with indirect steam and a liquor that contains 7.5 grams lime (CaO) per liter. The yield was 80 per cent of a brown pulp of long fiber and relatively good strength.

The digestion was followed by recording the pressure and temperature and by the determination of the decrease in the lime content of the liquor. For this purpose samples were removed every quarter of an hour, and later every half hour. The samples were titrated for the $Ca(OH)_2$ content by means of 0.1 normal hydrochloric acid with phenolphthalein. The acid was added drop-wise with constant stirring, till the color just disappeared. (Tables showing progress of cook omitted.) The loss in $Ca(OH)_2$ at the end of the cook was 38 per cent. In determining the yield of pulp, the material was washed with running water for half an hour, or until the wash water was rather clear and had only a slight alkaline reaction.

The pulp obtained in this manner naturally could not be bleached and still contained the greater portion of the ligneous materials. Zinc chloro-iodide colored the fibers a deep yellow. If one dyed a sample with malachite green solution in the presence of acetic acid, and washed out the excess of dye with water, a dark green staining was obtained, indicating, according to Klemm, that the material contained large amounts of lignin. The microscope revealed all the different kinds of fibers originally observed in the raw material, in nearly unchanged condition. Bast and medullary cells are mixed with many fine hairs and fibers from the internal part of the grass and also with very long fibers and lignified sacs cell. These cells are distinguished by the violet color which they assume in the treatment with zinc chloro-iodide. All other fibers present are colored yellow.

As in the case of straw and wood pulps, the pulp from the grass absorbed large amounts of lime. The ash content has therefore increased, while a portion of the silica has been dissolved out. From

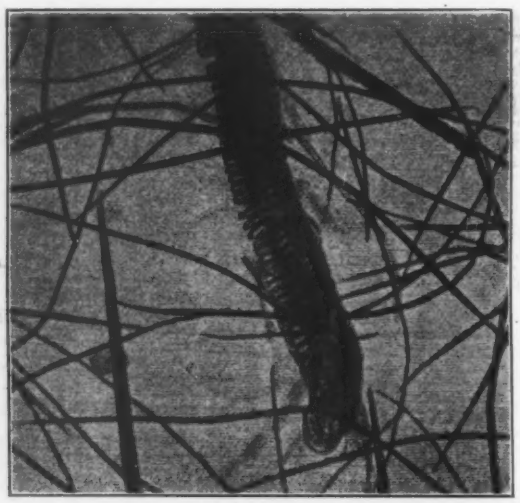

FIG. 3
Action of Copper Oxide-Ammonia Solution on Bast Fibers.

the appearance and the properties of the lime pulp, one would expect—as in the case of straw—that it might find use in the manufacture of pasteboards and, with or without the addition of sulphite pulp or mechanical wood pulp, in the manufacture of wrapping paper.

After washing the pulp and after a short beating in the hollander, a deep-brown paper was obtained, similar to that from straw pulp. In addition the paper proved to be fully sized. This property is probably due to the presence in the grass of medullary substances, which, upon cooking with lime, are transformed to a slimy mass and act as a sizing agent for the paper. This effect is probably increased to some extent by the calcium silicate resulting during the digestion.

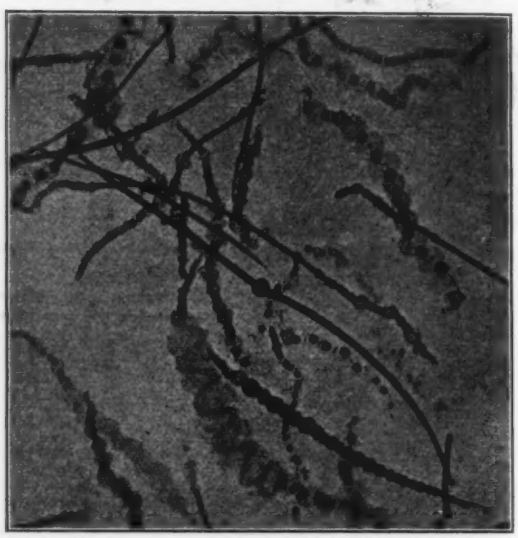

FIG. 4
Bast and Spiral Fibers.

In the analysis of the pulp, the fiber loss during washing was determined by washing a weighed amount of the fibers upon a funnel containing a bottom of machine wire until the filtrate was clear or free of fibers. The residue was dried and weighed. The α-cellulose was determined by heating a quarter of an hour with sodium sulphide.

The following figures were obtained:	Per cent
Yield	80.00
Ash	7.59
Silica	0.072
Lime(CaO)	6.45
α-Cellulose	83.50
Waxes and Fats	1.74
Fiber loss	18.17

Sulphate Cook

Digestion with the sulphate process gave a product containing less ligneous material. If one wishes to make this a commercial process, the digestion cannot be carried too far because of the poor yield. In obtaining a commercial yield (35 to 40 per cent), one must consider that the pulp will contain many undigested fibers, which will not be destroyed even with a strong bleaching action (as much as 10 per cent chlorine). There is therefore a limit for the strength of the liquors. If this limit is not reached, even if by only a small amount, the content of undigested fibers will be considerably greater. The fibers are identified by their darker color and give the surface of the paper samples a mottled appearance. The basic color of the sulphate paper is a deep gray, which is quite a contrast to the brown tone of the lime paper.

The following conditions were selected for the digestion: 1,000 grams of grass (air-dried) were digested with 12 liters of liquor, containing 14.20 grams sodium hydroxide and 4.48 grams sodium sulphide per liter, at 4 to 5 atmospheres (corresponding to 154°C. as the highest temperature) for 4 hours. The cook was carried out with indirect steam in a stationary digester. Under these conditions a pulp was obtained with a medium gray color and average

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Conveniently shaped; no holders needed.

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Nested together and dispensed inverted, inside untouched by hands.

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Vortex Drinking Cups are the safety zones of double protection.

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XUM

strength in a yield of 39.4 per cent. It contained many undigested, much darker fibers which did not, however, materially affect the color of the paper samples. The digestion was followed by the titration of the total alkali, the sodium hydroxide and sodium sulphide contents and also by observations of the temperatures and pressures.

Greatest Consumption of Alkali

The greatest consumption of alkali occurred during the first half hour. The remaining three hours showed a very slight consumption of alkali. The liquor soon becomes brown and at the end of the digestion it is a deep brown. It also possesses a very disagreeable odor, which is very pronounced during the digestion period. The loss of sodium hydroxide during the digestion was determined to be 53.8 per cent, that of sodium sulphide, 46.7 per cent.

The pulp was washed as in the case of the lime cook. The differences in the properties of the pulps was very noticeable after the digestion period. Upon beating the pulp in the hollander the portion from the inner part of the grass was more quickly decomposed and was more slimy. This beating must be carried out with care in order to avoid shortening the already short fibers.

In bleaching the pulp, 5 per cent chlorine gave a medium yellow color. The darker colored fibers could not be readily detected in the sample by reflected light, but they were quite in evidence by transmitted light. With 10 per cent chlorine one obtains a very light yellow, that can practically be called white. The dark-colored fibers are still evident by transmitted light. 13.5 per cent chlorine does not increase the quality of the product to a noticeable degree. The bleach was carried out according to the directions of Wrede (Papier-Ztg., 1909, 806) in the hollander without the addition of acid. From 10 to 27 hours must elapse before all the chlorine was consumed. The pulp cannot be stirred during the bleaching process, since it collects together into balls.

The unbleached pulp still contains lignin, and shows the characteristic color with malachite green. Zinc chloro-iodide reveals the presence of yellow fibers and fiber bundles, that is undigested fibers, but the greatest part of the long fibers remain colorless. The bast and medullary cells, especially the lignified sack cells, are distinguished by the violet color. The bleached pulp shows considerably less of these cells. They are indicated by the reddish-violet color with zinc chloro-iodide. Yellow particles could scarcely be observed.

Analysis of the Pulp

Analysis of this pulp gave the following values:

	Per cent
Ash	6.74
Silica	0.05
Waxes and fats	3.12
α -Cellulose	93.24
Wood gums	.....
Pentosans	15.72
Copper number	1.695

This sulphate pulp is suitable, either in bleached or unbleached conditions, for the manufacture of paper in which no great strength or purity is desired. Stronger and better paper may be obtained by mixing the sulphate pulp with 25 or more per cent of sulphite pulp. The product which has been bleached with 5 per cent chlorine seems to be suitable for this purpose.

The details of two other cooks are reported, which will not be given here. The first used 9.04 grams sodium hydroxide and 4.5 grams sodium sulphide, while the second increased the digestion time by 2 hours. In neither case, however, did the pulp show any better bleaching properties, while the yields were approximately the same.

Comparative analyses of the various products are given in the following table:

	Raw Material	Sulphate Cook I	Sulphate Cook II	Sulphate Cook III	Lime Cook
Yield	....	39.40	43.40	40.55	80.00
Fiber loss on washing	....	26.35	24.15	27.75	18.17
Ash	4.09	6.74	6.75	6.54	7.95
Silica	0.112	0.05	0.04	0.03	0.07
Waxes and fats	9.47	3.12	2.28	5.45	1.74
α Cellulose	....	93.24	92.49	93.63	83.50
Pentosans	18.25	15.72	13.22	15.23	.....
Copper No.	....	1.69	1.04	1.35	.....

These values indicate that the best digestion was secured with sulphate cook no. II, using the smaller amount of alkali.

A New Paper Stock Plant From Brazil

By Kirby Thomas, Consulting Engineer

Some years ago the Brazilian Government engaged Dr. Victorio Perini—Italy's leading fiber expert—to make a comprehensive inspection of Brazil's fiber possibilities. After his research and official report to the Government, Dr. Perini devoted himself to the scientific cultivation of a fibrous plant known locally as Brazilian Flax, classified by the botanists as *Canhamo Braziliensis Perini*, that he had discovered in the State of Minas Geraes; a plant indigenous to Brazil which showed great possibilities with respect to furnishing a fiber for the textile and paper industries. After four years of intensive study and cultivation, he succeeded in transforming this thorny, scraggly, crooked weed into a straight, beautifully formed plant, free from thorns, that carried an excellent quality of flax as well as yielding a fine pulp plant for paper making.

In December, 1917, a small company was formed in New York to make experimental growths of Perini in the United States. These experiments were highly satisfactory in every respect. The plantation experiments were carried on in Georgia (1918) and Alabama (1919), under the direct personal supervision of a recognized fibre expert.

A great many characteristics prove the Perini plant to be absolutely in a class of its own and no botanist has ever been able to satisfactorily identify it as a member of any recognized plant family. The nitrogenous nodules on the roots make it a great soil builder; the branches or stalks can be cut and will grow again on transplantation; it flowers and bears seed from one end to the other; it has a tap root five feet long; it resists droughts and freshets and requires absolutely no cultivation. The woody part of the stalk will pulp as well as spruce or hemlock, which are the finest woods used in the paper trade.

It takes only four months to grow Perini for paper stock purposes. At Selma, Ala, experiments over several seasons verified a minimum estimate of ten tons per acre and a cost including delivery of the product f. o. b. Selma of $9 per ton, based on the lowest estimated yield per acre. Tests show also that the Perini plant is absolutely immune to the attacks of any plant enemy known to Brazil or the United States. The field experiments made in Georgia and Alabama obtained an average of 13 tons of fiber per acre and this amount can probably be increased.

Plans to introduce this plant commercially have been made and arrangements to supply it to the paper trade for a new and desirable source of paper stock are already under way.

Shartle Brothers Co. Building New Pump

Middletown, Ohio July 3, 1922.—The Shartle Brothers Machine Company, manufacturers of paper mill machinery are building a 12 x 20 pump. This pump is designed to take care of the requirements of the largest type machines in use, in fact it is a step in advance of these requirements. This pump will be built on the same general lines as the other Shartle pumps, with the exception that there will be some improvements added which we believe will even strengthen the reputation of the Shartle Pump.

XUM

GROUND WOOD
CHEMICAL PULPS

PERKINS-GOODWIN CO.
NEW YORK

PAPER

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Dealers in All Grades of Paper

SPECIALISTS IN

BOOK PAPER, GLASSINE and EMBOSSED GLASSINE PAPERS

Exclusive Distributors for

WESTFIELD RIVER PAPER COMPANY
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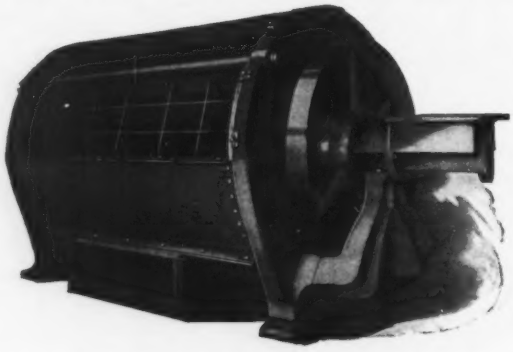
"IMPCO" TAILING SCREENER

FOR SCREENING GROUND WOOD TAILINGS

Very Low Power and Upkeep Expense



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IMPROVED PAPER MACHINERY CO. **Nashua, N. H.**

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WHALEN SULPHITE PULPS

Made from the SITKA SPRUCE of BRITISH COLUMBIA
Noted for Fibre, Color and Strength

SNOWHITE BLEACHED SULPHITE	GLACIER EASY BLEACHING SULPHITE	SWAN STRONG SULPHITE

As exclusive Sales Agents for all of the products of the WHALEN PULP & PAPER MILLS, LTD., in addition to stocks at the mills, we will carry large stocks of the above well-known brands in New York, thus insuring prompt deliveries.

Your inquiries addressed to any of our offices will bring prompt quotations by wire.

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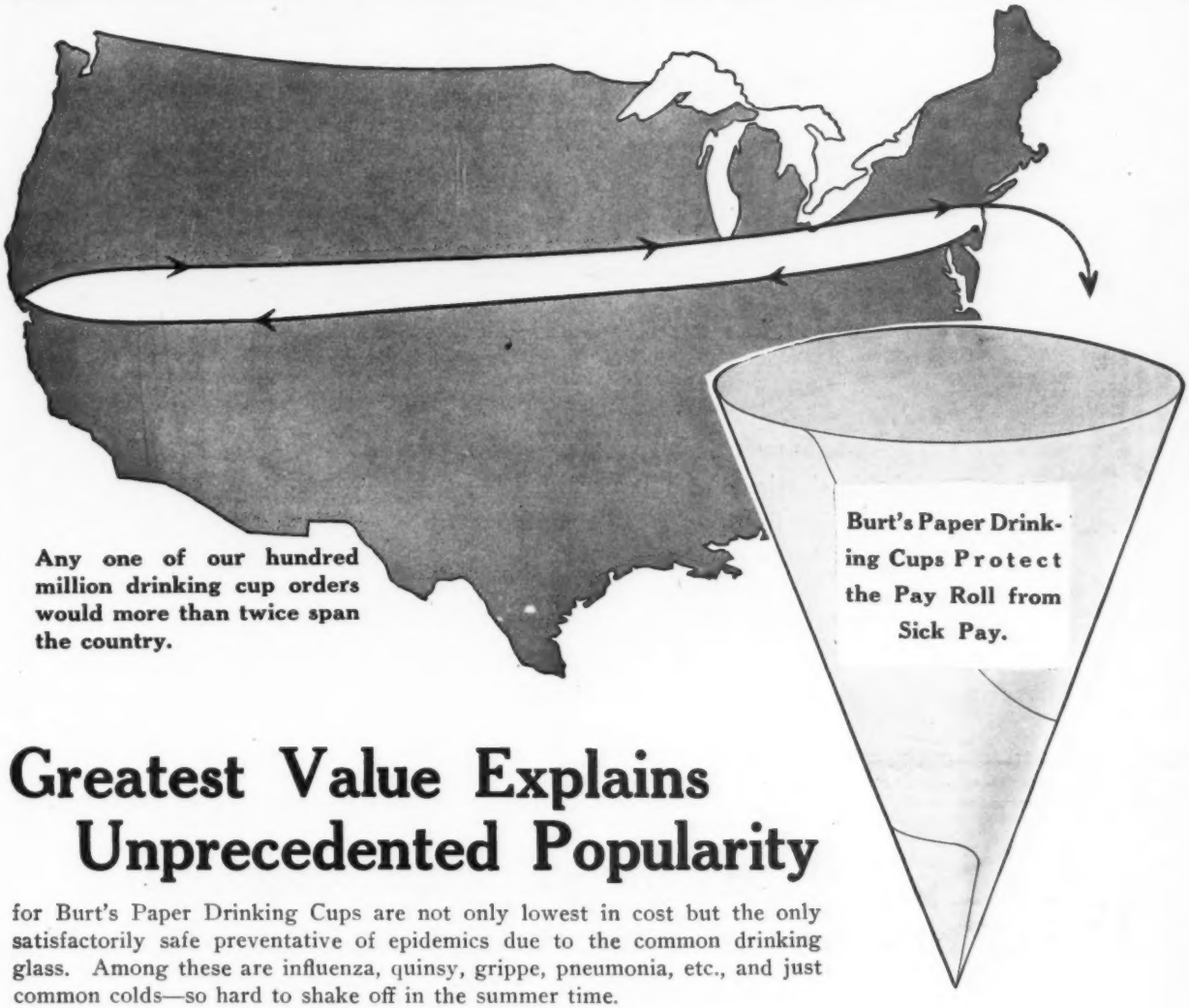


Any one of our hundred million drinking cup orders would more than twice span the country.

Burt's Paper Drinking Cups Protect the Pay Roll from Sick Pay.

Greatest Value Explains Unprecedented Popularity

for Burt's Paper Drinking Cups are not only lowest in cost but the only satisfactorily safe preventative of epidemics due to the common drinking glass. Among these are influenza, quinsy, grippe, pneumonia, etc., and just common colds—so hard to shake off in the summer time.

BURT'S PAPER DRINKING CUPS Have 12 Exclusive Features

No wax to taste.
Not easily set aside.
Untouched by hands.
No bottom to fall out.
Lowest priced.
No touching drinking edge before use.
No opening up.
Made of fine white paper.
No animal glue used.
Kept in dust proof one-at-a-time dispensers.
No softening when holding hot drinks.
Trebly reinforced to fit hand without holder.

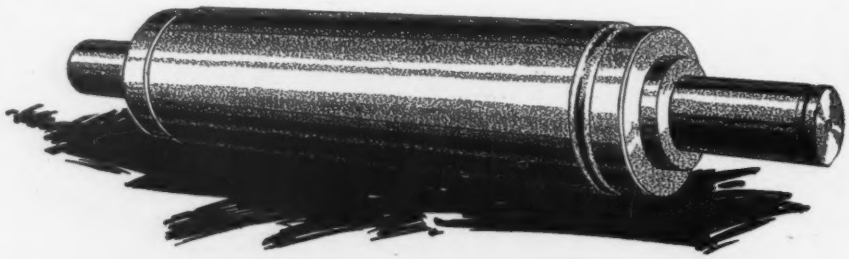
America's leading banks, offices, shops, theatres, hotels, hospitals, etc. are rapidly adopting them.

Dispenser Costs Only $5.00

F. N. BURT COMPANY, Inc.

Paper Cup Division

BUFFALO, NEW YORK



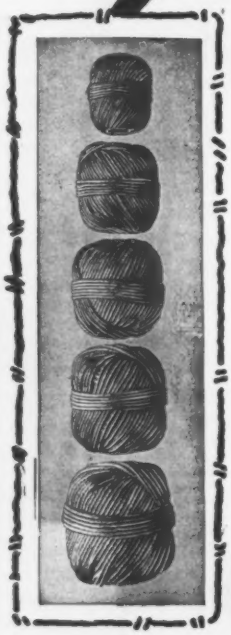
SUPER CALENDER ROLLS

The final touch is given your paper stock by the Calender Rolls. For half a century our rolls have been putting that finishing touch upon papers that have an acknowledged superiority.

THE APPLETON MACHINE COMPANY

APPLETON WISCONSIN

"AMERICAN"



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The name "AMERICAN" as applied to cordage means "more value in every way." Send for copy of our General Catalogue, Prices and samples. Address Department M.

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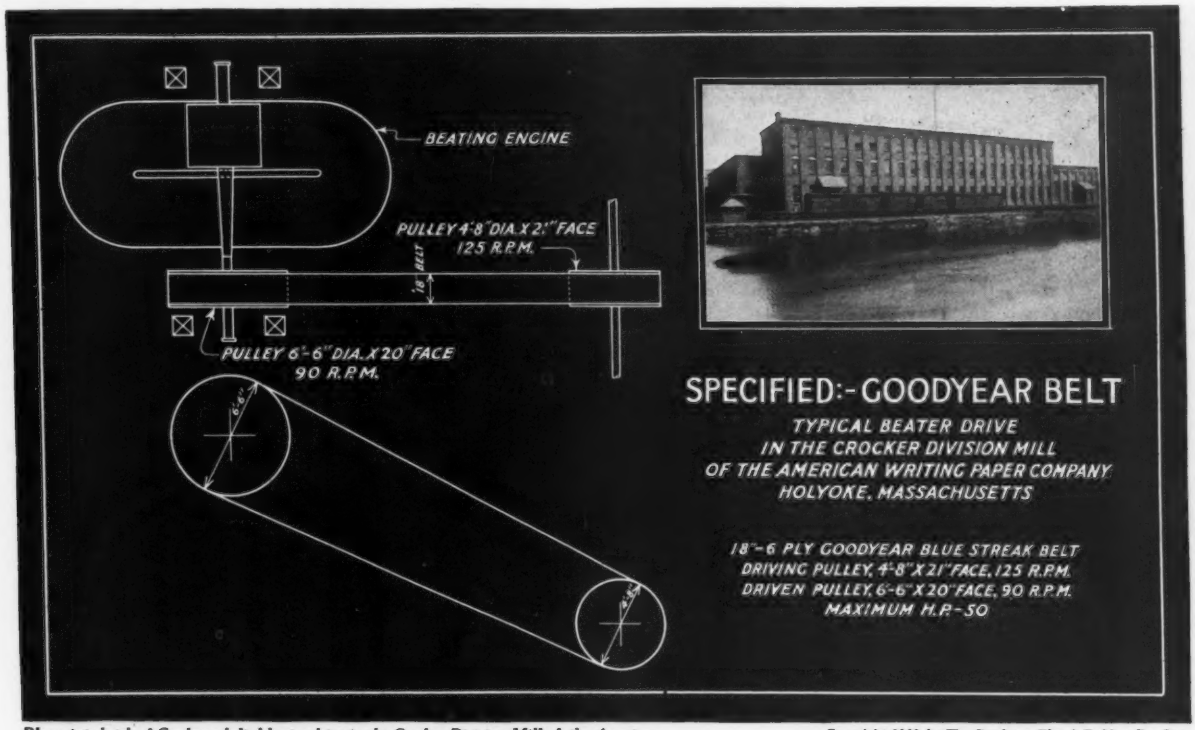
CORDAGE



Blueprint sketch of Goodyear-belted beater drive in the Crocker Division Mill of the American Writing Paper Company, Holyoke, Mass., and insert photograph of the Crocker Division Mill

Copyright 1922, by The Goodyear Tire & Rubber Co., Inc.

Twenty-six Eagle-A Mills and the G. T. M.

The American Writing Paper Company, of Holyoke, Massachusetts, comprises 26 mills throughout the country, making the nationally celebrated Eagle-A Quality-Standards of printing papers. The belting equipment and requirements of their every plant, involving hundreds of drives, have been analyzed in the past two years by a G. T. M.—Goodyear Technical Man.

"This analysis of the belt equipment in each of our 26 plants is the most comprehensive and valuable work of its kind that has ever come to my attention," writes Mr. J. Moles, Chief Engineer of the American Writing Paper Company. "The actual G. T. M. work required months, and the final report, together with recommendations submitted by the Goodyear Company, comprises several volumes."

A great deal of the equipment installed on the basis of this expert analysis is Goodyear Blue Streak Belting. This is particularly true of the equipment of the great beater drives which transmit the power from the main shaft to the great revolving cylinders where numerous knives beat rags into stock for the paper machines.

Two of these Goodyear Blue Streak Belts, 18-inch, 6-ply, were installed in the Crocker Division in Holyoke, in June, 1920. These two Goodyears have been in constant operation for two years now, and have never been touched. They never required taking-up or repairing. Mr. Moles says they are as good today as the day they were installed, though they have been working on this heavy drive for 24 hours a day, six days a week.

Hundreds of other Goodyear Belts in American Writing Paper plants are giving correspondingly faithful, trouble-free and long-wearing service. Their efficient and economical performance is a tribute to the quality built into them and to the correctness and exactness with which they are specified to their jobs.

This is a splendid example of the work of the G. T. M., the working of the Goodyear Plant Analysis Method, and the performance of Goodyear Belts. You can have a similar survey made of your transmission or conveying problem. There is a G. T. M. in your neighborhood, and you may rely on his recommendations and on the quality of Goodyear Belts. For further information about the Goodyear Analysis Plan, write to Goodyear, Akron, Ohio, or Los Angeles, California.

GOODYEAR

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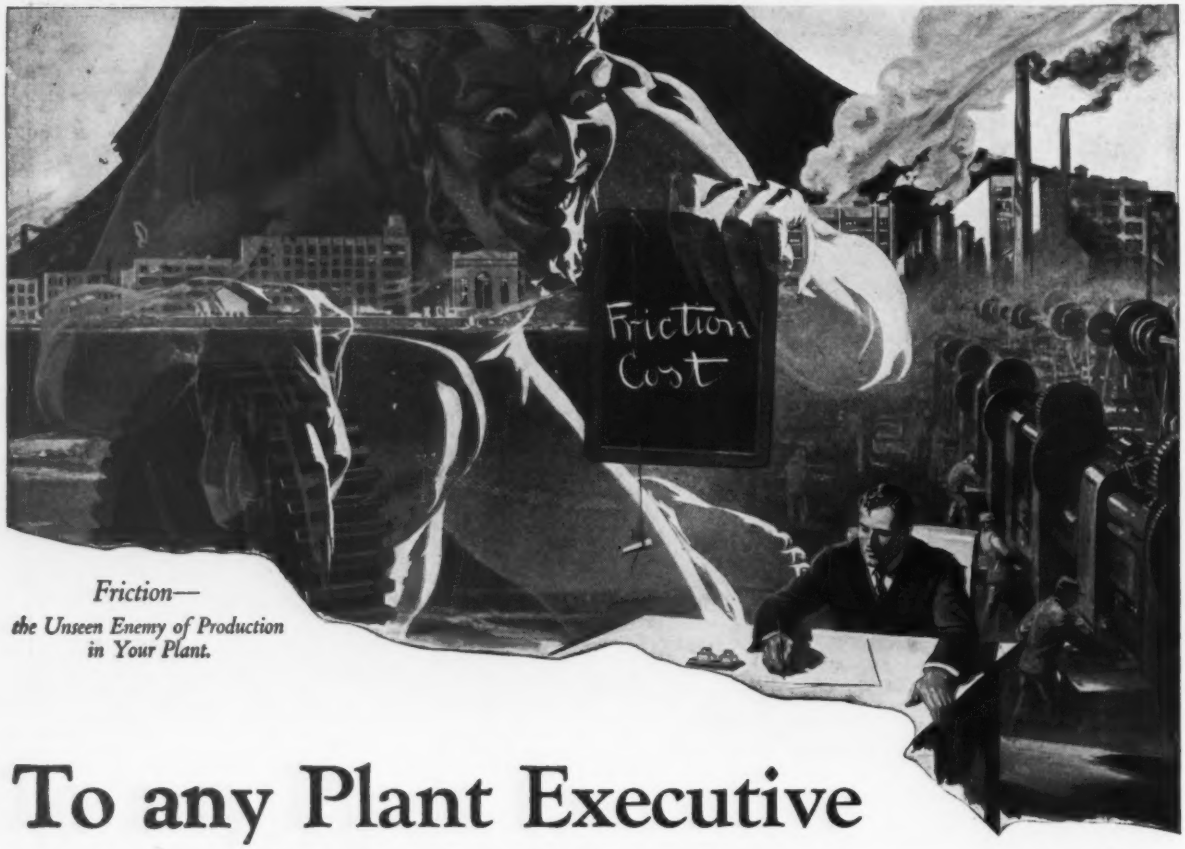

Friction—
the Unseen Enemy of Production in Your Plant.

To any Plant Executive
—blessed with a boring-in mind

THE assistant to the country's foremost producer and exporter of lumber says of his chief: "*He must always be shown. He wants to see things for himself. He always gets at the bottom of everything.*"

We have yet to find a plant executive who concentrates on the subject of lubrication and gets to the bottom of it without being richly repaid.

This does not mean that you put on overalls, or spend your evenings reading technical literature on lubrication.

It means simply that you let us place before you an authoritative Lubrication Audit of your plant to show:

—whether your engines and machines are being helped to greater production by correct lubrication — or are being penalized by unscientific haphazard lubrication.

Such an Audit would also include accurate lubrication recommendations based on world-wide lubricating experience with all types of mechanical equipment.

You buy and use oil for one purpose only: to reduce friction. Do you know the extent of friction's menace in your plant?

When you check friction's huge

VACUUM OIL COMPANY

annual bill in the form of slowed-down machinery, frequent repairs and lost horsepower, we believe you will wish to put a guiding hand on the choice of the lubricating oils used throughout your plant.

Meanwhile, a Lubrication Audit will give your mind something definite upon which to focus. Details in column at right.

The Lubrication Audit

Explained Step by Step in Condensed Outline

INSPECTION: A thoroughly experienced Vacuum Oil Company representative in co-operation with your plant engineer or superintendent makes a careful survey and record of your mechanical equipment and operating conditions.

RECOMMENDATIONS: We later specify, in a written report, the correct oil and correct application of the oil for the efficient and economical operation of each engine and machine. This report is based on:—

(1) The inspection of the machines in your plant.

(2) Your operating conditions.

(3) Our 56 years of lubricating experience with all types of mechanical equipment under all kinds of operating conditions throughout the world.

(4) Our outstanding experience in manufacturing oils for every lubricating need.

CHECKING: If, following our recommendations in this audit, you install our oils, periodical calls will be made to check up the continuance of the desired results.

FOR THE ABOVE FREE SERVICE address our nearest branch office.

Domestic Branches:

New York *(Main Office)*	Boston	Chicago	Philadelphia
Detroit	Pittsburgh	Indianapolis	Minneapolis
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GARGOYLE

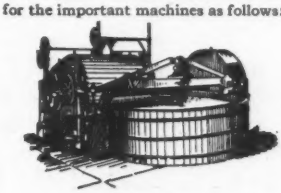
Lubricating Oils

A grade for each type of service

A Lubrication Audit

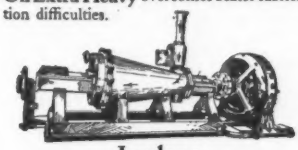
in the *Paper Industry*

would point out the Correct Lubrication for the important machines as follows:



Beaters

Beater bearings, generally unnecessarily hot, will run cooler if the stock leakage is eliminated and oiling is regularly attended to. The regular use of **Gargoyle D. T. E. Oil Extra Heavy** overcomes beater lubrication difficulties.



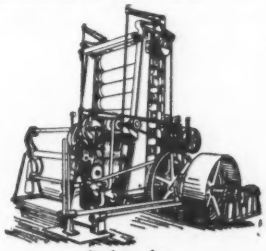
Jordans

Because of the high speeds and heavy pressures which are always present, and the side pull on bearings when belt driven, it is necessary to use a heavy bodied oil. For this purpose we recommend **Gargoyle Etna Oil Heavy Medium.**

Paper Machines

For bearings of the paper machine, subjected to induced heat from steam used for drying, an extra heavy bodied oil is required such as **Gargoyle D. T. E. Oil Extra Heavy.**

The rolls at the wet end subjected to moisture and heavy pressure demand a compounded oil which will resist the washing te.. 'ency and maintain a perfect oil film. We recommend **Gargoyle D. T. E. Oil Heavy X** for these specially trying conditions.



Calenders

Paper machine production is directly dependent upon uniform speed. Calender bearings are subjected to heavy pressures and high frictional heat. The regular application of Gargoyle D. T. E. Oil Extra Heavy insures uniform speed, and consequently minimizes "broke."

VACUUM OIL COMPANY

Editorial

Vol. LXXV New York, July 6, 1922 No. 1
FIFTY-FIRST YEAR

Growth in Consumption of News Print

The improvement which is now manifesting itself in practically every department of the paper industry was first observed in news print. The increase in the consumption of this variety of paper in the United States has been especially marked for the first four months of this year, being 7 per cent greater than for the corresponding period of 1920 which was the peak year. The study which this fact has led the Canadian Pulp and Paper Association to make is therefore very interesting and helpful in leading to an understanding of the situation.

Unfortunately, the Federal Trade Commission did not publish statistics previous to 1918 so that it is not possible to reckon with the differences in the stocks held at the mills or with those held by the publishers. The quantity of news print available for consumption rather than the actual consumption will therefore have to be considered. These figures will, however, serve as a fairly accurate basis of comparison and in a latter paragraph we can examine the more accurate figures from 1918 onwards.

The quantity of news print available for consumption depends upon three factors: (1) Production; (2) Imports; (3) Exports. These three factors for the years 1913 to 1921 are as follows:

	Production	*Imports*	*Exports*
	Tons	*Tons*	*Tons*
1913	1,305,000	219,602	43,276
1914	1,283,000	315,475	61,239
1915	1,239,000	368,409	55,056
1916	1,315,000	468,230	76,443
1917	1,359,012	559,113	97,544
1918	1,260,285	596,270	96,446
1919	1,374,517	627,559	110,624
1920	1,511,968	729,866	46,225
1921	1,226,189	791,978	16,850

By adding the imports to the production and subtracting the exports we arrive at the quantity available for consumption:

	Available for Consumption	*Increase % over previous year*	*Increase % over 1913*
1913	1,481,326	..	..
1914	1,537,236	3.8%	3.8%
1915	1,552,353	1.0	4.8
1916	1,706,787	9.9	15.2
1917	1,820,581	6.6	22.9
1918	1,760,109	3.3*	18.8
1919	1,891,452	7.4	27.7
1920	2,195,239	16.0	48.2
1921	2,001,317	8.9*	35.1

* Decrease.

One of the most remarkable facts shown in the above tables is the small variation in the production of news print in the United States, a sharp contrast to the steady increase in production in Canada. Production of the U. S. mills in 1921 was less than in any previous year listed and even in 1920, the highest figure, was only 16 per cent greater than in 1913. In the same period Canadian production increased from 350,000 tons to over 800,000 tons; in 1920 it was 883,000 tons or slightly over two and one-half times the 1913 production.

To offset this lack of growth in production, the imports of news print into the United States have shown a steady increase in this period. Imports in 1921 were 265 per cent greater than in 1913, an average increase of 33 per cent annually. Since 1913 the United States has depended upon foreign news print to the extent shown in the following table:

Year	*Imports as % of Consumption*	*Year*	*Imports as % of Consumption*
1913	14.9%	1918	33.3
1914	20.5	1919	33.1
1915	23.7	1920	33.2
1916	27.4	1921	39.5
1917	30.7	1922 (1st 4 mos)	42.2

As mentioned previously the above figures refer to the amount of news print available for consumption and take no consideration of fluctuations in stocks during the year. From the beginning of 1918 it is possible to give a more accurate consumption figure taking actual shipments from the mill, imports, exports and increase or decrease of stocks in the hands of those publishers reporting to the Federal Trade Commission.

This method of working the consumption gives the following results for 1918 to 1921 inclusive:

	Tons	*% of Previous Year*	*% of 1918*
1918	1,711,858	....	....
1919	1,964,973	114.8%	114.8%
1920	2,112,285	107.5	123.4
1921	2,024,569	95.8	118.2

It will be seen that these figures are somewhat different from those given previously, *e. g.* 1920 according to this method of figuring shows an increase in consumption over 1919 of 7.5 per cent, whereas the increase in the amount of paper "available for consumption" was 16 per cent. Again the consumption in 1921 was only 4.2 per cent less than in 1920, whereas the amount "available for consumption" was 8.9 per cent less than in the previous year.

These apparent contradictions are accounted for by the variations in the quantities of news print held in stock by the publishers. During 1919 these stocks decreased by 69,482 tons, in 1920 they increased by 83,930 tons.

Most of the increase in stocks in 1920 took place after the end of March and this goes to show once more that the scramble for paper was due rather to hoarding by publishers than to an actual scarcity of the supply. In 1921 production fell off considerably but publishers' stocks decreased by 22,423 tons, imports increased by 62,000 tons and exports declined by 29,000 tons, all of which helped to offset the lack of production. When these figures are taken into consideration, the variations in consumption of news print during the last few years were not so great as the production figures indicated, but were considerably influenced by the stocks carried by

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the publishers. Publishers built up large stocks towards the end of 1920 and up till the end of April, 1921. Since that time they have been drawing on those stocks and at the end of April, 1922, stocks reported were the lowest since July, 1920.

July the Fourth

When the crackle of fireworks and the swish of skyrockets come each year, proclaiming to the world that July fourth is at hand, paper men have, in the past, come to regard these manifestations very much in the manner that union men regard the five o'clock whistle. Resigned to the fact that summer has actually arrived, they have abandoned all thoughts of intensive work as utterly as has the schoolboy just out for his summer's vacation. Business was dull in the summer time, they argued—why attempt an uphill fight against a slack demand, low water and the natural vacation period? Might as well get out the fishing tackle and golf bags and relax for a couple of months!

All well and good as a climax to a year crammed with solid business and hard work. But the whole past year has been, apart from the intense mental strain, a protracted season of dulness—almost equivalent to the average "slump" of summer vacation, in point of real business transacted. Manufacturers are not keen for another such let-up in activity. They have been fed up with slack production. The whirr of the Fourdrinier and the raucous buzz of the grinder are welcome sounds in many mills that have had a "vacation" forced upon them during the greater part of the last twelvemonth.

Neither employees nor executives, glad to be back at the old jobs again and encouraged by the signs of a business revival in recent weeks, are hankering after any more vacation periods. When the chance is offered to pitch in and turn out some real, honest work and receive, in return, some real, honest dollars, they are not going to pass it up.

In this Fourth of July's celebration, paper manufacturers may well have joined in the jubilee. Gyrating "pin-wheels" might have been taken as symbolical of the rapidly revolving wheels of industry; the ascending sky-rocket as the upward tendency in paper prices—the descending, spent shell of the rocket representing the downward swooping cost of living; spouting Roman candles, belching forth into the night enough multi-colored stars for every paper man to hitch his chariot of ambition to; small fire-crackers sputtering like the pop-pop-pop of the thousands of gasoline engines back on the job, and over all, the deafening report of the giant-cracker as it tells the whole world with a mighty *boom* that business depression is over and, summer or no summer, the paper industry is in for a period of prosperity.

Foreign Paper Prices Lower

The monthly average import price of news print which showed a slight upward tendency for March according to Department of Commerce figures resumed the downward trend for April which they have been showing for so many months past. The figures for April, which are the latest available were .0342 cent per pound as compared with .035 cent for March and .058 cent for April of last year.

The average import price of groundwood on the other hand showed a considerable increase, the figures for April being $30.27 per ton as compared with $26.69 for March and $42.65 for April of last year.

The average import price of unbleached chemical pulp for April was $57.42 per ton as compared with $58.18 for March and $89.39 for April of 1921.

The average import price of bleached chemical pulp for April was $87.21 per ton as compared with $91.99 for March and $134.14 for April a year ago.

The average import price of pulpwood for April was $10.65 per cord as compared with $10.45 for March and $14.13 for April of the year preceding.

The average export price of news print for April was .046 cent per pound as compared with .044 cent for March and .073 cent for April of last year.

The average export price of wood pulp for April was $52.95 per ton as compared with $43.85 for March and $71.25 for April of last year.

Continuous Beautification Campaign

[FROM OUR REGULAR CORRESPONDENT.]

KALAMAZOO, Mich., July 3, 1922.—Kalamazoo's rarest beauty spots today are to be found in the wide-spreading area around the mills of the Bryant Paper Company. The campaign of beautification and improvement inaugurated by the late Frank H. Milham is not being allowed to fall into neglect by his successor, Felix Pagenstecher.

This has been a wonderful growing year in Michigan and nature has done her part in aiding the work of skillful gardeners. All along Alcott street, from the New York Central tracks on the west to Portage street on the east, extends a veritable mass of brilliant crimson rambler roses, backed by banks of other blooming plants and shrubs and bushes indigenous to Michigan.

Special care has been taken to preserve trees everywhere. Maples prevail, with now and then a cluster of spiked pines. The lawns are as heavy and rich as a heavy brilliant green carpet and are kept free of weeds. Especially in the wide spaces about the new administration building these splendid areas of grassy sward show to particularly good advantage.

A beautiful setting for the big plant was one of the hobbies of the late President Milham. His first step along that line was taken many years ago, when he purchased an unsightly triangle of sand, sand burrs and Canada thistles, and improved it until now it is the heart of the whole system and the pride of south Kalamazoo.

In connection with this improvement, Mr. Milham told what he chose to term a joke on himself and the Bryant Paper Company. Seated under the spreading branches of a giant tree and on the banks of the upper channel, rich in the bloom of water lilies, he said: "When we bought this spot for $500, it had no possibilities in anyway and the price paid was a big one. After it had been improved, the equalization committee of the county looked it over and forthwith tacked on a taxable valuation of $5,000."

Substantial Contribution to Educational Fund

The Vocational Education Committee of the Pulp and Paper Industry has recently received a check for $200 from Minnesota and Ontario Paper Company, International Falls, Minn., as a contribution toward the fund to complete the textbooks on pulp and paper manufacture that are being prepared.

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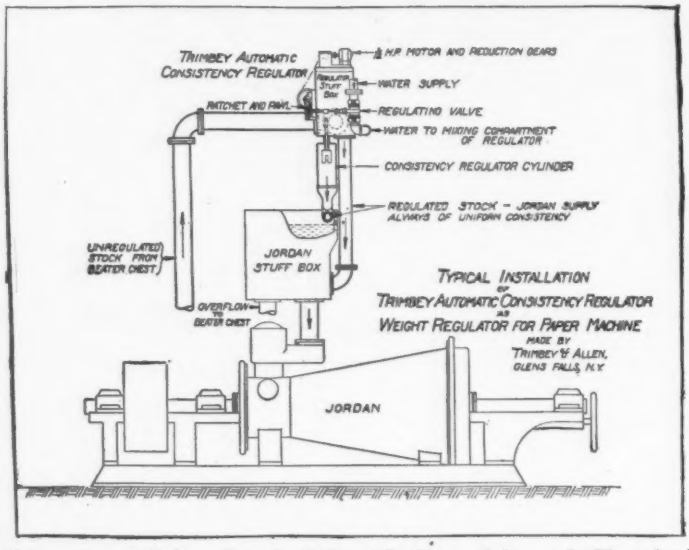
UNIFORM STOCK


TRIMBEY AUTOMATIC CONSISTENCY REGULATOR
½ H.P. MOTOR AND REDUCTION GEARS
WATER SUPPLY
REGULATING VALVE
WATER TO MIXING COMPARTMENT OF REGULATOR
CONSISTENCY REGULATOR CYLINDER
REGULATED STOCK – JORDAN SUPPLY ALWAYS OF UNIFORM CONSISTENCY
RATCHET AND PAWL
UNREGULATED STOCK FROM BEATER CHEST
JORDAN STUFF BOX
OVERFLOW TO BEATER CHEST
TYPICAL INSTALLATION OF TRIMBEY AUTOMATIC CONSISTENCY REGULATOR AS WEIGHT REGULATOR FOR PAPER MACHINE
MADE BY TRIMBEY & ALLEN, GLENS FALLS, N.Y.
JORDAN

This is the machine that will regulate your paper stock to a uniform consistency, thus insuring UNIFORM BRUSHING ACTION at the Jordan. Given stock of uniform character and consistency going on to the wire you will get UNIFORM WEIGHTS and UNIFORM RUNNING CONDITIONS.

This regulator will also cause to be delivered at Beaters, Mixers or Bleachers, stock of a set, uniform consistency.

See our exhibit. Booth 515, 8th Exposition of Chemical Industries, Grand Central Palace, Sept. 11-16.

TRIMBEY MACHINE WORKS **Glens Falls, N. Y.**

M. G. TIBBITTS, *Sales Manager*

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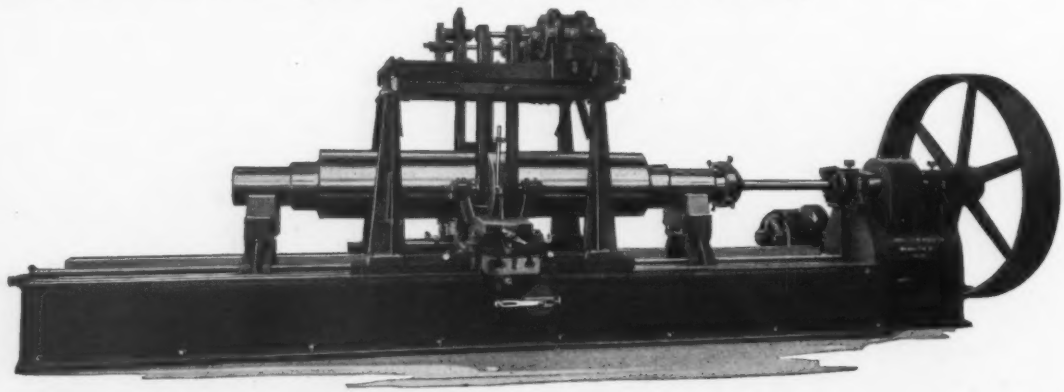
ROLL GRINDERS are the only machines of the kind fitted with automatic crowning device which develops a perfect crown without the use of a guide or former and repeated trying for the correct setting.



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Section of the Technical Association of the Pulp and Paper Industry

AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Conducted by W.G.MacNAUGHTON, Secretary

Plans of Mechanical Pulp Committee

W. A. Munro, Chairman of the Committee on Mechanical Pulp, advises that his committee has decided to concentrate its efforts for the present year on two particular lines of investigation. The first of these is a study of the action of the different types of burrs in dressing the pulp grindstone, and the quality of the pulp produced. The other subject is a study of the white water in the mechanical pulp mill and the results to be obtained in its re-use.

The first was investigated some years ago in the Wausau branch of the Forest Products Laboratory. More recently it has become the basis of a patented process which is being used to a considerable extent on a royalty basis. A study at this time by a number of co-operating mills with facilities for accurate observation, will be productive of value to the industry. In many cases mills have followed different practices more from tradition than from a basis of efficiency, and favorable or unfavorable opinions have been given without exact data for them.

The second of the studies, that on white water, is bound up very closely with the investigation of the Committee on Waste in the Industry, with reference to the waste of material in mill effluents. It has long been the opinion in a number of mills that the re-use of white water is detrimental to the best quality of the product. It is nevertheless the case that in many of the most progressive mills and those which are operated most economically, the mechanical pulp mill operates in what is practically a closed system so far as its process water is concerned.

Mills which are interested in the subjects mentioned should get in touch with W. A. Munro, International Falls, Minn., and pool what information they may have.

"Vocational Education in Paper Industry"

A booklet which will be appreciated by everyone interested in vocational education in the pulp and paper industry, is available by addressing the Technical Association, 18 East Forty-first street. This booklet is by J. C. Wright, director of the Federal Board of Vocational Education, and is entitled *Vocational Education in the Pulp and Paper Industry*—Scope of vocational education, analysis of payroll jobs and synopsis of the textbooks.

As plans will doubtless be made in the near future for the establishment of foreman training conferences and courses in pulp and paper manufacture to begin in the early fall, everyone interested should avail himself of this opportunity to prepare for them.

Folder for Technical Association Section

A strong imitation leather folder of attractive appearance and printed with "Technical Association Section" on the front, large enough to accommodate the section for three months is available on order with remittance of twenty-five cents to TAPPI, 18 East 41st St., New York.

Paging

Beginning with the present issue which is the first number of Vol. LXXV the pages of the Technical Section will be numbered separately and will run consecutively through the rest of the volume.

Index

An index covering the section is being prepared by Clarence J. West, chairman of the committee on Bibliography. As soon as completed it will be published and will be available to all Technical Association members.

September to Be Big "Chemical" Month

According to plans which have already been formed, the month of September, 1922, as in previous years, will see a larger concentration of meetings of chemical societies and associations of the chemical industry than any other time during the year. The three meetings which will hold the center of the chemical stage this year will be the American Chemical Society in Pittsburgh, the Eighth National Exposition of Chemical Industries in New York, and the American Electro-chemical Society in Montreal, Canada.

The American Chemical Society with its membership of 15,000 American chemists will get together for its annual meeting in Pittsburgh on September 6 to 9, inclusive. The following week, September 11 to 16, will be given over to the Chemical Exposition at the Grand Central Palace in New York, while the American Electrochemical Society has elected to meet in Montreal the week after the Exposition, beginning sessions on September 21. The date for the Eighth National Exposition of Chemical Industries was selected to come between the meetings of the two societies.

In addition to the meetings of the chemical societies, the Grand Central Palace in New York, the 1922 home of the Chemical Exposition, has been chosen as the meeting place during the week of the Exposition for three other associations connected with the chemical industry. So far plans have been formulated for meetings in conjunction with the Exposition of the American Ceramic Society, the Salesmen's Association of the Chemical Industry, and the Technical Association of the Pulp and Paper Industry. Following the meeting of the American Chemical Society in Pittsburgh, it is expected that a considerable portion of the members attending will make their way to New York to spend the following week at the Exposition.

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July 6, 1922

PAPER TESTING METHODS

Microscopical, Chemical, and Physical Processes Described with an Account of the Apparatus Employed

By Committee on Paper Testing, Technical Association of the Pulp and Paper Industry*

Since the last publication of the methods proposed by this committee, there have been a number of methods and devices developed for testing paper. There seems to be a growing realization that there are not a sufficient number of good methods or apparatus for testing paper. The two notable instances of improvements will be found in the interest in a sizing test and in the tearing strength quality.

In view of the above facts, it was thought desirable to revise the Paper Testing Methods as a whole. Certain of the data have been rearranged to make it more convenient and there have been added a contents, list of illustrations, bibliography and an index. It is believed that these additions will make these methods of considerably greater value because of their increased convenience.

Minor changes have been made in some of the methods or formulæ and an attempt has been made to make the methods and illustrations as up-to-date as possible. In addition, a number of methods have been added which will widen the field of use of the Paper Testing Methods. The additional methods are:

1. Sutermeister's Calcium chloride stain for microscopic work.
2. Lofton-Merrit stain for unbleached sulphate.
3. Relation between relative humidity and certain physical qualities of paper.
4. Methods for determining the machine and cross direction and also the wire and felt side.
5. Factors for conversion to and from the metric system and also for computing roll lengths.
6. Wet tensile test.
7. Stress-strain test for heavy bag paper, indicating stretch under load.
8. Additional methods for absorption.
9. Tearing test; a brief discussion of five methods or apparatus.
10. Conductivity or electrolytic method for measuring the sizing quality of paper.
11. Volumetric composition of paper.
12. Method for measuring the number of conducting particles in thin paper.
13. Resistance to water penetration.
14. Sulphur in paper.
15. Tarnishing test.

Throughout the report, wherever the author, inventor or originator of a method or apparatus is known, reference is made and credit is given. Wherever data or information are taken directly from a publication, reference is made to the corresponding number of the bibliography.

In reference to the investigation of microscopic examination of fibers and the bursting strength of paper, as proposed by the committee last year it was not possible to include the results in this report. Data have been received from about half of the co-operating laboratories but it is planned to complete the study and publish the results later. The indications are, however, that the various laboratories do not get as close check results as would be expected.

It is believed that the Paper Testing Committee has arrived at a place where a change of policy is desirable. In the past, this committee has suggested and proposed various methods of testing which, in its judgment, were of value in determining the quality of paper. It is thought desirable that T. A. P. P. I. authorize this committee to investigate the following subjects with the view to putting paper testing on a more scientific basis. With the active co-operation of various laboratories equipped for paper testing, it is believed that data can quickly be collected to permit of more definite official methods of testing.

1. A survey be made of the various laboratories with a view to determining the extent of paper testing equipment available.
2. The development of standard official methods of the Association to be used by its members.
3. A study of the relation of the various physical tests of paper and an attempt made to reach positive conclusions.
4. A study of the proper meaning or interpretation of the various tests and an attempt to reduce the tests (chiefly physical) to some fundamental units.
5. The determination of the proper test for a particular use.

In conclusion, it is thought that paper testing should be put on a firmer basis and that this Association is responsible to the paper industry for the development of methods of measuring the quality of the paper and it is hoped that this committee will be permitted to follow the program suggested above.—*Annual Report of the Committee on Paper Testing Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, April* 11, 1922, *by F. C. Clark, Chairman.*

I. Paper Testing

1. Purpose—The testing of paper is performed for three reasons and it is possible that methods suitable for one purpose may not be suitable for another. These purposes are: (a) to study the manufacture in order to improve the quality, (b) to maintain a predetermined quality, and (c) to determine whether the quality is equal to a predetermined standard or specification. The manufacturer is interested chiefly in (a) and (b), while the user or buyer is interested in (c), when paper is bought on specification. It is obvious that various methods may be developed for use in mills that are entirely satisfactory for the development of quality and for maintaining that quality. It is thought, however, that the methods used by testing laboratories in connection with the purchase of paper on specifications, should be so defined and standardized that comparable results will be obtained by different laboratories. The methods herewith given are in some cases merely tentative suggestions which can not be accepted as standard without further investigation. It must be understood, however, that in determing what tests to make, that the purpose for which the paper is to be used is of primary importance, and that that test should be used which will indicate the quality that is specifically desired.

2. Development—Paper testing has developed rather slowly in this country and many of the methods are of foreign extraction, as are some of the instruments and apparatus. However, a considerable amount of development has taken place and there are a greater number of methods now available. This development has not, however, been in any systematic manner and has been spread over the whole field of testing, to meet special conditions. A systematic study should be made and standard methods developed and used.

3. Groups of Methods—For convenience, the various methods of testing are grouped into three classes:—microscopical, physical and chemical. In most cases, some of the methods from each class are necessary. The accompanying chart indicates some of the tests given below and shows the relation between them. It is obvious

*The committee on paper testing is as follows: George R. Atkinson, Scott Paper Company, Chester, Pa.; Frederick A. Curtis, Paper Section, Bureau of Standards, Washington, D. C.; Charles A. Fourness, Kimberly-Clark Company, Neenah, Wis.; John H. Graff, Brown Company, Berlin, N. H.; Helen U. Kiely, American Writing Paper Company, Holyoke, Mass.; Edwin Sutermeister, S. D. Warren Company, Cumberland Mills, Me.; Sidney D. Wells, Forest Products Laboratory, Madison, Wis.; Frederick C. Clark, chairman, Pejepscot Paper Company, Brunswick, Me.

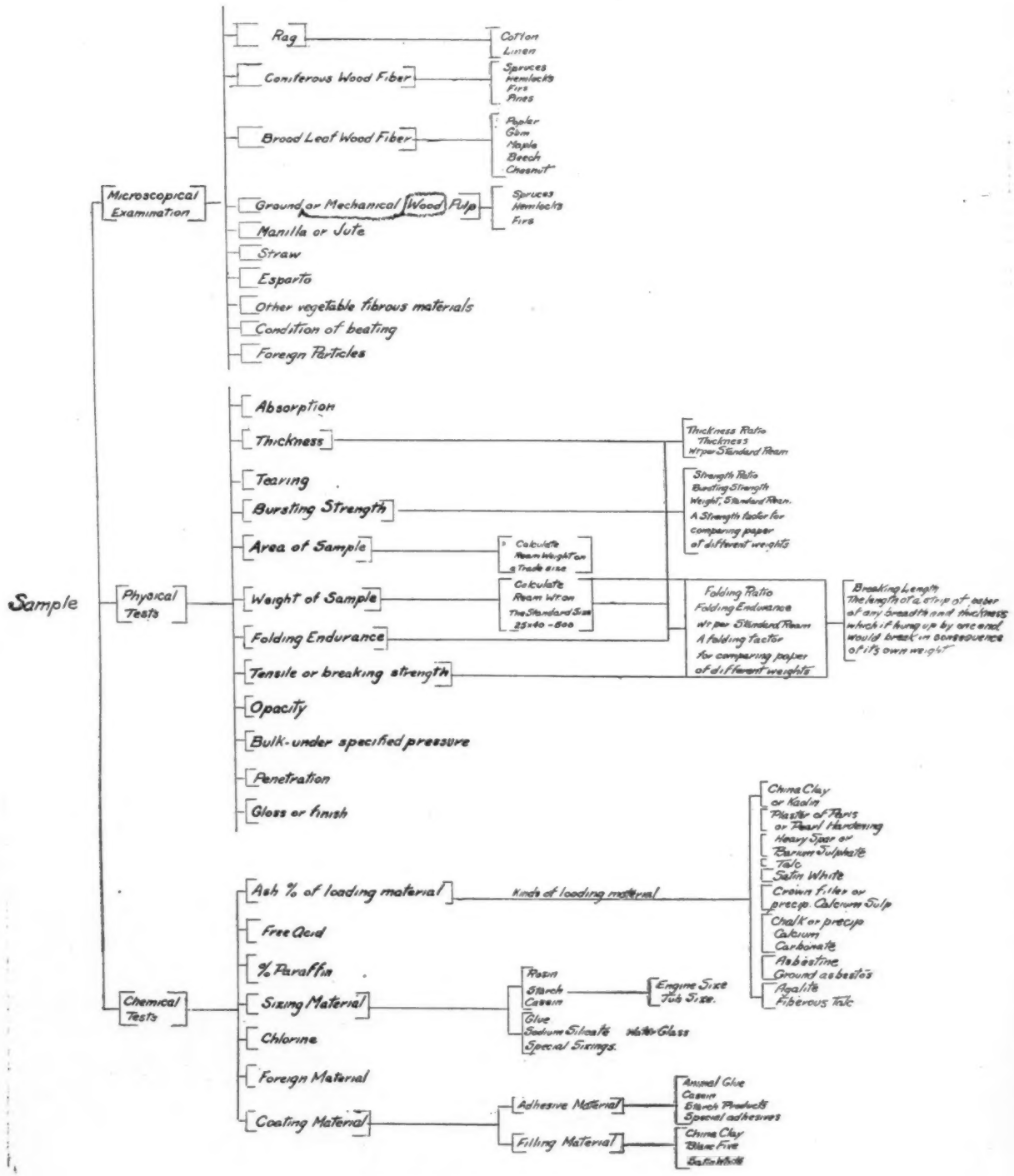

PLATE 1. CHART OF PAPER TESTS

Serial No. 6946 | FROM The Paper Company of America | Received 3-15-22

Folder No. 33633 | Reported 3-22-22

MARKED Roll 62 File #3642 Unsensitized Blue Print Paper

Weight (25 x 40, 500)=	65	lbs.
Weight (17x22-500)=	24.3	lbs.
Bursting strength	41	points
Thickness=		inches
Ratio bursting strength to wt. (25 x 40, 500)	63.1	%

FIBER COMPOSITION		
Rag	50	%
Chemical pulp		%
Chemical pulp, bleached		%
Chemical pulp, unbleached		%
Coniferous fiber	50	%
Broad-leaf fiber		%
Ground-wood pulp		%
Manila and jute		%
		%

CHEMICAL TESTS		
Ash	15	%
Total resins		%
Animal size	Present	%
Starch	Present	%
		%

SPECIAL PHYSICAL TESTS	Machine Direction	Cross Direction	Unit
Wet Breaking Strength ~~Absorption in 10 minutes (Klemm)~~	752	384	~~grams~~ mm
Double folds (Schopper)	65	63	Numb
Tearing strength	41		gram
Breaking strength . Dry	6.9	6.3	Kg
Elongation under load of ..... lbs.			%
Breaking length	5500	5020	yds.

Weight data $\frac{64.25}{10.98 \times 10 \times 9} = \frac{65}{24.3}$

REMARKS:

Wet Breaking Strength

Correction Formula $y = [(x-1.6)139]$

No.	BURSTING STRENGTH (Points)	Breaking Strength Wet Test Mach	Cross	THICKNESS (Inches)	BREAKING STRENGTH Dry Test Machine Direction	Cross Direction	TEARING STRENGTH 4-Ply Machine Direction	Cross Direction	FOLDING ENDURANCE (No. of Double Folds) (Strip 15 mm wide) Machine Direction	Cross Direction
1	40	7.9	3.8		7.7	3.8	10.4		42	65
2	41	8.1	4.3		6.0	4.1	10.5		43	51
3	40	7.2	3.9		7.1	4.1	10.6		50	61
4	42	8.0	4.4		6.9	4.3	10.5		76	90
5	40	7.3	4.6		6.8	4.4	10.6		75	62
6	38	6.2	4.6		6.5	3.9	10.6		57	51
7	42	7.6	4.6		6.9	4.0	10.6		66	58
8	39	6.5	4.4		7.6	4.2	10.6		60	67
9	39	6.0	4.7		7.3	3.8			53	62
10	40	5.3	4.3		6.4	4.2	8.4.4		126	69
Mean	41.1	7.01	4.36		6.87	4.08	41.1		69.8	63.4

NO.	ABSORPTION IN 10 MINUTES Klemm Method Machine Direction	Cross Direction
1		
2		
3		
4		
5		
Mean		

Breaking strength in lbs. per 1" width=(Breaking strength in kg per 15 mm width)×(3.73).
Breaking length in yards=(Breaking strength in lbs. per 1" width)×(13,889)÷(Wt. in lbs. per 25×40, 500).
Wt., in lbs., of ream of 500 sheets=(Wt. of 1 sheet in grams)×(1.102).
Wt. in grams per sq. meter=(Wt. in lbs. per 25×40, 500)×(1.406).
Wt. in grams per sq. meter =(Wt. in lbs. of any ream of 500 sheets)×(1406.13)÷(Area of sheet in sq. in.).
Wt. of any 500-sheet ream=(Wt. in grams per sq. meter)×(Area of sheet in sq. in.)÷(1406.13).

NOTE	NAME OR NO.	UNIT	INITIAL
Bursting strength	Mullen #3557	Points	E.L.
~~Thickness~~ Wet Breaking	Schopper 50 Kg. #5168	Factor $y=[(x-1.6)139]$	R.S.K.
Breaking strength	Schopper 50 Kg. #5168	Kg	E.L.
Tearing strength	Elmendorf 4 Ply	Grams	E.L.
Folding endurance	Schopper	Double Folds	E.L.

PLATE 2. TEST RECORD CARD

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that all the tests indicated are not necessary in any one particular case but such tests should be used that will indicate the quality of paper necessary for a particular purpose.

4. Record Cards—Complete laboratory records should be kept of all tests (especially original data) and in such a manner as to be always available. The accompanying 5 x 8 inch record with both sides reproduced is offered as a suggestion, though individual requirements may necessitate certain alterations.

5. Sampling—The proper sampling of paper for test or the interpretation of the test data in connection with sampling has been neglected. It is pointed out, however, that no test data is more accurate than the sampling. This applies with especial force in connection with the testing of a shipment of paper to determine whether it conforms to a definite specification. It is obvious that cases, bundles, frames, rolls, etc., must be sampled differently but as much care should be exercised in this connection as in the sampling of wood pulp for moisture.

6. Tolerances—The value of the test data is accurate only when a large number of tests are made or when proper tolerance is allowed for. This tolerance is necessary, due to the errors which are inherent in the whole process of paper testing. The

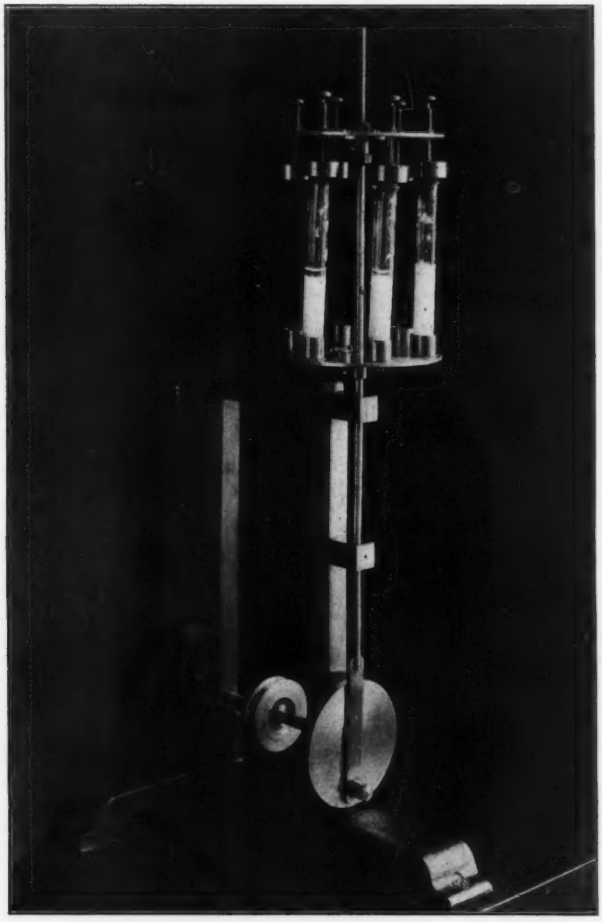

Plate 3. Test Tube Shaker

errors are introduced (a) by improper or incomplete sampling, (b) by the natural lack of uniformity in paper, due to its structure, and (c) by the error of the apparatus or method of testing which may either be inherent in the apparatus or due to improper manipulation.

7. Test Sample—The original sample, obtained by proper sampling should be sufficiently large and of enough sheets to enable all the proposed tests to be made without recourse to an additional sample. The various tests should be made on the several sheets of the sample in order to obtain a reasonably fair average.

II. Microscopical Examination

1. Estimation of Fiber Content

a. Preparation of Slide.—Secure a representative sample by clipping a piece of about the area of a cent from the corners of

Plate 4. Binocular Microscope

several of the sheets to be tested. Place the samples in a dish, small beaker, or test tube, cover with a 0.5 per cent caustic soda solution and bring to a boil to remove sizing or other binding material. The pieces are next drained, washed several times in tap water, rolled into a small pill or ball between the thumb and first finger for about one minute, then placed in a test tube, about half filled with water and shaken vigorously, so as to defiber thoroughly the particles of paper. A small part of this defibered mass is removed from the test tube by the aid of a microscopic needle (Note No. 1) thoroughly dried on absorbent paper (Note No. 2) that is free from lint, placed on a microscopic slide and covered with several drops of Herzberg's stain. The fibers are carefully pulled apart, by the aid of microscopic needles, so that they will not lie too much in a bunch and are then covered with the cover glass. (Note No. 3.) The slide is now ready for an estimation by the aid of the microscope.

It is suggested that after the small sample of paper has been boiled with 0.5 per cent caustic soda, that the sample be next washed with 0.5 per cent hydrochloric acid and finally with water. It is difficult to wash all the caustic from the fibers and an addition of hydrochloric acid seems advisable.

Note No. 1.—There are two methods in use for removing a representative sample of fibers from the test tube.

First method. Use a test tube of about ⅝-inch diameter and about 6 inches long, keep the fibers diluted with water, so that they will mix readily when shaken vigorously. The fibers mix very easily if the test tube is about two-thirds full of water and fibers. The microscopic needle referred to is a pointed steel needle imbedded in a small wood or metal handle. Shake test tube, and then quickly incline it at a sharp angle. Insert the point of the microscopic needle and remove a small bundle of fibers for use in making up the microscopic slide. The foregoing method of procedure is best where the fibers are long, such as in a rag bond, ledger, or writing paper, also for long-fibered wood papers made of new sulphite or sulphate pulps. For groundwood papers, or where the fibers are very short and contain a large quantity of fine broken particles such as cooked old paper stock, the use of the needle to secure a representative sample will result in securing more long fibers than short fibers, with a result of inaccuracy. For papers containing much short fine fiber it is best to use the second method.

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Second method*(37). In using this second method it is advisable to have the fibers slightly more dilute in the test tube than is the case in the first method, also the test tubes should be about three-quarters of an inch in diameter by about 8 inches long. In place of the microscope needle a 10-inch glass tube of about seven thirty-seconds of an inch in diameter is employed. This glass tube has one end rounded so as not to have sharp edges and the other end is provided with a small rubber bulb. This serves as a dropper. Spence and Krauss describe the modus operandi as follows: "When ready to prepare the slides, the test tube is well shaken, the dropper inserted, with as little delay as possible, two inches below the surface, two bubbles of air expelled and a little less than half an inch of the mixture drawn into the tube. This is transferred to slides, completely emptying the dropping tube, which will make four drops. The slides are placed in an air bath to expel moisture, cooled, and each drop stained with Herzberg stain, just before it is to be examined. The excess stain is then removed—after the colors have developed to a maximum point, about three minutes required—by tilting the slide and the cover glass placed over the spot." After the cover glass is in place, it should be pressed down gently to expel excess stain and any excess stain removed by absorbing it with a piece of blotting or filter paper.

Note No. 2—The absorbent paper used should have a hard, smooth surface so that no lint will adhere to the sample of fibers. As soon as the sample is dry it may be removed to the microscope slide and is then ready for the drop of stain. A second method of drying the sample is to put it on the microscope slide and then touch it with the corner of a piece of folded filter paper of ordinary quality. For this purpose a cheap grade of filter paper may be cut into pieces about 1¼ inches by 4 inches. This makes a handy size for use in drying the sample and also in removing the excess stain from around the edges of the cover glass. Care must always be exercised to prevent the sample of fibers to be tested from becoming contaminated with fibers from the absorbent paper or filter paper. A third method of drying the sample of fibers is to place them on a microscope slide and evaporate the moisture in a current of heated air, in an oven or by some other suitable arrangement.

In regard to drying the small sample of the fibers on the microscope slide, attention is called to the fact that the sample must be dried so that the stain will not be diluted and yet must not be dried too hard because then it is difficult to separate the fibers and the staining does not take place uniformly.

Note No. 3—There are three kinds of cover glasses. The first two are very thin pieces of glass either round or square of approximately half an inch in diameter. The round or square cover glasses are necessary for high magnification and have one disadvantage in that they are very fragile. The third type of cover glass is the same size as the microscope slide, and if thin microscope slides are used then a second microscope slide may be used as the cover for the first. The chief advantage of the large cover glass is that it permits three or four fields to be made up on each slide.

b. Discussion of Manipulation.—The following suggestions are offered to those just beginning these tests:

It is absolutely essential to have a satisfactory stain or else the results will be worthless. To test out a stain make up a mixture of about equal parts of bleached soda pulp, bleached sulphite pulp and rag filter paper. Prepare a microscope slide from this mixture and stain with the stain to be tested. If the stain is correct, then the soda pulp should show a dark blue color, due to the thicker and more opaque fiber walls, the sulphite pulp should show a light blue, due to the thin fiber walls and the rag fibers will show a red or wine-red color. If the blue color is more of a violet, then too much iodine is present and more water or zinc chloride should be added. Zinc chloride produces the blue color, iodine produces the red and the yellow colors and the addition of water serves to weaken the color that predominates.

In some cases where it is necessary to examine all grades of paper, it is advisable to keep several stains on hand. A stain that gives the best color on groundwood and bleached sulphite seldom gives a correct color on mixtures of rag, bleached sulphite and soda pulps. In such a case, make up one stain so that it will give a bright lemon yellow on a known sample of groundwood pulp and a slightly greenish blue on unbleached sulphite. For the mixture of rag, bleached sulphite and soda pulp, so adjust a second stain that the rag shows as a clear wine-red, the sulphite as a blue and the soda fibers as a dark blue. In testing out a stain always have on hand authentic samples of pulp so these mixtures may be made up.

To check estimates of fiber analysis slides of fibers in known proportions are made. Pure stock is beaten in a small beater and made into hand sheets. Sheets of the various pure fibers are kept under the same atmospheric conditions. To make up a field of known composition take weights of the pure fiber sheets and make up a total of at least 5 g. in proportions to give the percentage desired. Disintegrate and mix thoroughly by shaking with shot in a bottle or by the action of a small disintegrator. Sample and make up the slide as for any disintegrated paper sample.

The estimation of the fiber content is based on the relative proportion of the kinds of fibers contained therein, expressed on the percentage basis, considering the total fiber content as 100 per cent. In making a fiber estimation no account is taken of the per cent of clay, alum, size, etc., that may be contained in the paper. It is always advisable to make up at least two separate samples of fiber taken from the test tube and the final result should be the means of all observations on these two separate slides. In special cases it may be necessary to make up four separate fields.

There are two methods of making the determination for fiber content. One is the count method, the other is the estimation method. Both methods have their advocates and both give good results. This committee, however, recommends the estimation method, believing it to have the following advantages:

(1) It is more accurate under certain conditions, namely, in making groundwood determinations, and of equal accuracy under all other conditions; (2) it is much quicker; (3) it is easier to teach an individual to estimate correctly than to count correctly; (4) it is possible to make up standard mixtures for ready comparison.

The estimation method involves training the eye by the comparison of unknown samples with standard mixtures of known composition. The result of each observation on each part of a field examined, should be written down and the mean of all the observations is the result to be reported as final. Accuracy in the estimation method involves practice and continual reference to known standards. Unstained slides of these standard mixtures should be kept handy to be made up in case there is any doubt about the sample being tested.

There is a third method for fiber determination that has been proposed by Spence and Krauss *(37) which is worthy of description here and recommendation to the Technical Association. The procedure is as follows: Samples are made up as described under Note 1, second method. The slide is placed under a microscope of 160 diameters and the lengths of the various fibers are measured in terms of the diameter of the field seen through the microscope. An adjustable stage is also essential as otherwise it would not be possible to move systematically over the entire sample to be examined. After four samples have been estimated as above described, the figures are added together to get the total length of each kind of fiber present. The total length of each kind of fiber present multiplied each by its own weight factor gives a set of results that are directly comparable and may be converted into the per cent of each kind of fiber present. The weight factors as determined by Spence and Krauss are as follows: Rag, 1.000; hemlock pulp, 0.870; poplar pulp, 0.454; birch pulp, 0.652; beech pulp, 0.525; maple, 0.365. This method, which is undoubtedly a step in the right direction, is recommended as a method to be used in cases of dispute between two different analyses. It is a very slow method and cannot therefore be used where many routine samples must be examined each day. The Spence-Krauss method is undoubtedly the only method that will enable a determination of the proportion of the various kinds of wood present, such as a mixture of hemlock, beech, poplar, birch, maple, etc.

No definite recommendation is given in regard to the microscope magnification. This must be left to the individual preference. Satisfactory estimations may be made with a magnification as low as 45 diameters and equally satisfactory work is being done with magnifications as high as 120. The lower magnification has the advantage of giving larger fields, whereas the higher magnification gives more of the details of the markings of a fiber. The monocular and binocular microscopes both have their advocates, and like the magnifying power, it is very largely a matter of getting used to a certain procedure. Where only one microscope can be purchased it is better to use a monocular, as it can be fitted with more attachments to suit special needs. It may be well to add that a low power of about 25 diameters for examining specks and surfaces, also a high power of 350 or 400 for details of fiber markings will often be found to be of use. Spence and Krauss*(37) recommend a magnification of 160 diameters.

In any method of testing it is always advisable to make use of all possible apparatus that may be of assistance in carrying out the method described. There are no holders for microscope

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slides on the market, therefore a brief description will be given and it may be constructed at almost no expense for labor or material.

The holder for the microscope slides is made as follows: take two pieces of brass 3/8 inch thick by ½ inch wide by 3 inches long (oak or maple may be used if the brass is not obtainalle), then cut a groove ⅛ inch wide by ⅛ inch deep along one of the longitudinal edges of the brass strip. This groove then serves as a rest for the glass slides.

The pins (see sketch) serve to prevent the glass slide from slipping out of the grooves while the bundles of fibers are being teased apart. Also note the parts on the sketch marked "Painted black" and "White surface." These serve as a background. The glass slide is placed over the black background when the unstained fibers are first put on the glass slide, as the light (almost white) colored fibers show up best with a black background. After the Herzberg stain is added, the glass slide is pushed to the other end of the brass holder, which brings it over the white background and causes the dark-stained fibers to show up more distinctly and enables even the smallest bundles to be separated.

For best results for microscopic work, a clear north light is desirable, and is to be preferred. However, where there is a large amount of routine testing that must be done, it is more advisable to have a more constant source of light. There are various types of lamps available but good results can be obtained with a Mazda nitrogen-filled lamp of 150 watts. It is necessary, however, to use a blue "daylight" filter in that case.

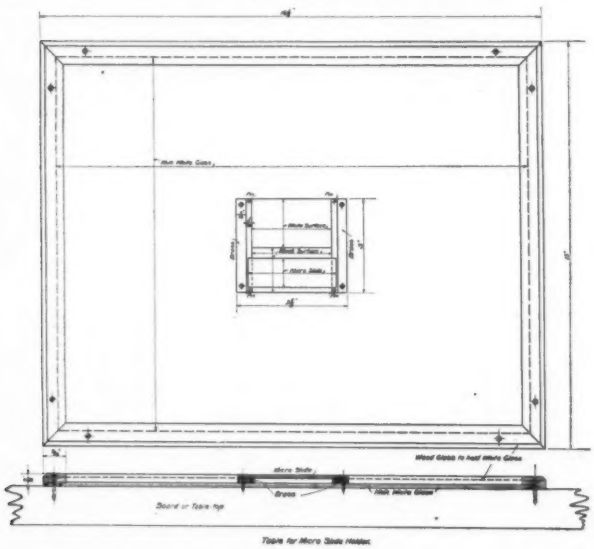

PLATE 5. HOLDER FOR MICROSCOPE SLIDE

It is to be noted that the color of the stained fibers on the slide will be somewhat different for the two kinds of illumination.

c. Common Stains.

Herzberg's. *(10).—The Herzberg stain is made according to the following formula:

Solution A—20 g. zinc chloride.
10 cc. of water (preferably distilled).
Solution B—2.1 g. potassium iodide.
0.1 g. iodine crystals.
5.0 cc. of water (preferably distilled).

Dissolve solutions A and B separately, then mix and allow to stand several hours, or until all sediment has settled out. The clear liquid is next decanted and is ready to be used in staining the fibers. All iodine solutions must be kept in the dark, as otherwise they deteriorate rapidly. The Herzberg stain is a selective stain, that is, it has selective staining properties. Ground or mechanical wood pulp, jute, flax tow, uncooked manila hemp and in fact most every vegetable fibrous material containing large quantities of lignocellulose, is colored yellow or lemon yellow. The removal of their lignocellulose content changes the staining effect from a yellow to a blue or wine-red color, though jute and a few other fibers remain unchanged in color. Thoroughly cooked and bleached soda and sulphite pulps, cooked and bleached

PLATE 6. BINOCULAR MICROSCOPE

straw pulp and esparto are colored blue or navy blue. Cotton and linen rags, thoroughly cooked and bleached manila hemp, and certain of the Japanese fibers are colored a wine red.

In connection with the Herzberg stain, the following alternative formula is suggested: 25 cc. zinc chloride solution (saturated) at 70° F. 5.25 cm. potassium iodide; 0.25 gm. of iodine, and 12.5 cc. water. Owing to the difficulty of obtaining zinc chloride of uniform moisture content, it has been found more satisfactory to use a saturated zinc chloride solution. By mixing the ingredients as stated above, the proper stain can be obtained at once.

Jenk's.—The stain known as "Jenk's Stain" is of value when it is desired to ascertain definitely small amounts of rag fiber with only a poor Herzberg stain available: to 50 cc. of saturated magnesium chloride solution add 2½ cc. of iodine potassium iodide solution made up as follows: potassium iodide, gm. 2; iodine, 1.15 gm., and water, 20 cc. Use exact quantities and keep solutions from the light; the stain is kept best in a small brown bottle with a pipette. Rag fiber is stained brown, straw is stained blue-violet, groundwood is stained yellow, and chemical wood either no color or deep red.

Sutermeister's. *(3).—A stain which is considered by some to be better than the Herzberg stain is made up as follows:

Solution A.—1.3 g. iodine and 1.8 g. potassium iodide in 100 cc. of water.

Solution B.—A clear, practically saturated solution of calcium chloride.

In using this stain apply a drop or two of solution A to the moist fibers on the microscope slide. After a minute or so remove the stain by means of a blotter and immediately put on a drop or two of solution B. Pull the fibers apart and distribute them by means of needles as before and drop on a cover class or thin microscope slide. Any excess of solution B should be removed by absorbing it with moist blotting paper. This

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stain is also selective in its action, the colors produced being as follows:

Red or brownish red: Cotton, linen, hemp, ramie.

Dark blue: Bleached soda pulps from deciduous woods.

Bluish or reddish violet: Bleached sulphite fibers and the thoroughly cooked part of the unbleached sulphite.

Greenish: Jute, manila and the more lignified fibers in unbleached sulphite.

Yellow: Groundwood.

As with the Herzberg stain this one should be adjusted by trial on known mixtures of fiber until it shows satisfactory difference in color. The two solutions should be protected against evaporation and dust but light does not change their staining properties to any extent.

d. Special Stains.

There are many stains in use for special purposes and a description of them is therefore advisable.

Lofton-Merritt Sulphate Stain. *(99).—The stain which was found to be most satisfactory in differentiating between unbleached sulphite and sulphate pulps or fibers was a mixture of one part of a 2 per cent aqueous solution of malachite green and two parts of a 1 per cent aqueous solution of basic fuchsine, or magenta. The solutions were made up according to the following formulas, kept in tightly stoppered separate bottles, and mixed only when wanted for use:

A—Malachite green	2 g.
Distilled water	100 cc.
B—Basic fuchsine	1 g.
Distilled water	100 cc.

Since there is considerable variation in the quality of dyes from various sources, it is not to be expected that any given combination of dyes or method of procedure will best fit all cases; it is, indeed, more than probable that the compound stain will have to be modified somewhat as to its two components, depending on the source of the dyes.

After this stain, therefore, has been made up according to formula, it will be necessary to test it out on samples of sulphite and sulphate fibers. To do this, samples of unbleached sulphite and sulphate pulps should be prepared and a few fibers of each placed on a slide, care being taken not to get the two samples mixed. The fibers are then dried and stained, as directed below, and then examined under the microscope. All the sulphate fibers should have a blue or blue-green color, and all the sulphite fibers should have a purple or lavender color. If any purple fibers appear in the sulphate pulp this indicates that too much fuchsine is present in the combination, and a little more malachite green solution must be added to counteract this effect. If, on the other hand, some of the sulphite fibers show green or blue, there is too much malachite green in the combination, and more fuchsine solution must be added. Of course the analyst must be sure that he is using authentic samples of the two pulps for this test. When tested out in this manner and the proper combination found, the stain is ready to be used on unknown combinations of fibers containing either unbleached sulphite or sulphate, or both.

A mixture of one-half sulphite and one-half sulphate may also be used to test out the stain, the proper combination for the stain being indicated when one-half of the fibers are colored blue, and the other half purple.

The stain should not be used for more than a few hours after being compounded and should be made up anew at least each day.

Phloroglucinol.—Dissolve 5 g. of phloroglucinol in a mixture of 125 cc. of distilled water and 125 cc. of concentrated hydrochloric acid. The solution should be kept in the dark as much as possible as it is prone to lose its staining property on exposure to light. This solution produces a magenta or wine-red color on mechanical pulp. The color may easily be noted by applying some of the stain to a piece of news print paper. There is approximately 80 per cent of mechanical pulp in newspaper so that a deep magenta color is developed. The depth of color is an indication of the amount of mechanical pulp present. A very light shade of color, however, does not necessarily prove the presence of mechanical pulp, as partly cooked jute, partly cooked unbleached sulphite pulp, and some other fibers are also slightly colored.

An additional formula is as follows:

Phloroglucine	2 g.
Alcohol (95%)	100 cc.
Conc. HCl	50 cc.

Aniline Sulphate.—Dissolve 5 g. of aniline sulphate in 50 cc. of distilled water and acidulate with one drop of concentrated sulphuric acid. This stain produces a yellow color on papers containing a large percentage of mechanical pulp. This stain is not quite as sensitive to mechanical pulp as phloroglucinol, but it is easier to obtain and prepare.

Para-nitroaniline.—Saturated solution in concentrated hydrochloric acid. This stain produces an orange yellow color in the presence of mechanical pulp and other lignified fibers.

The C. G. Bright Stain. *(78).—This is used for distinguishing between bleached and unbleached pulps.

Solution A: Tenth normal ferric chloride solution equal to 2.7 g. $FeCl_3 6H_2O$ per 100 cc. distilled water.

Solution B: Tenth normal potassium ferricyanide solution equal to 3.29 g. $K_3Fe(CN)_6$ per 100 cc. distilled water.

Solutions A and B should each be filtered through a fresh filter into clear glass stoppered bottles. Equal volumes are mixed fresh whenever the reagent is used.

Solution C: Substantive Red—0.4 g. of benzo-purpurin 4B extra (Bayer Co.), 0.1 g. of oxamine brilliant red BX (Badische Co.) and 100 cc. of distilled water. Have water hot and stir in the dyes slowly.

The staining solutions are used in tall narrow cylindrical beakers, which are set into a water bath. The slides are suspended in the beaker by a clamp which holds them at their upper ends, the clamps resting across the top of the beakers. The bath is heated by a small bunsen burner with a pilot flame, so that when the required temperature is reached the pilot flame may be used to maintain the temperature at the required amount. A thermometer should be suspended in the stain and the beaker containing the stain should be as small as possible so as not to use too much stain at one time.

In making up the slides for this staining method it will be necessary to use the dropper method as used by Bright and also by Spence. (See methods of making up microscope slides as outlined in first part of this report.) This dropper method involves dropping a dilute mixture of water and fibers upon the slide and then evaporating the water. The dry slide is then ready for staining.

Method of using solutions A and B known as the potassium ferric ferricyanide stain.

Mix equal volumes of solutions A and B, heat to 35° C. in the water bath, regulating the pilot flame so that the temperature will remain constant within one degree for a period not less than fifteen minutes. The dry slide is then dipped in distilled water to moisten it uniformly, so that air bubbles will not be formed when it is immersed in the stain. If air bubbles are formed the fibers under the bubbles will not be stained. If dipping in water still leaves bubbles, they can be removed by blowing across the slide from the edge. The slide is then suspended in the stain and left there for fifteen minutes at 35° C. It is then removed and washed, by dipping in and out of a beaker of distilled water six times and repeating the process in a fresh beaker of water. The slide can

then be placed wet into the red solution, but it is perhaps better to dry it out so that the fibers will be stuck on tightly again in case they have been loosened to any extent by the treatment.

Method of using solution C, the substantive red stain: A fresh solution is heated to 45° C., and the slide, after moistening and excluding bubbles as before, is suspended in the solution for five minutes at 45° C. and immediately washed in two beakers of distilled water.

The slide is then dried and a cover glass placed on with a drop of balsam.

Directions for assuring best results. To get the clearest, brightest results, distilled water must be used throughout, and the staining solutions must be fresh. The two solutions for making ferric ferricyanide will keep well if placed in separate bottles. Equal volumes are mixed together immediately before using. The red solution should be freshly made each time for the best results, as it gets thick and stringy on standing, especially when it is being heated up continually.

Staining under the conditions described gives an unbleached sulphite perhaps the deepest blue it is possible to obtain without depositing blue on the slide and on the bleached sulphite; the method also produces the best red on the bleached fibers without turning purple the unbleached fibers. Unbleached sulphite from different mills varies considerably in lignin content, hence some samples stain a deeper blue than others. The foregoing conditions give a satisfactory blue on a sample of high grade imported unbleached pulp as well as a better color on the average run of unbleached pulps, the latter being not so well cooked as a rule. With pulp containing more lignin it is possible to use a slightly stronger treatment with the red and thus get a better color on the bleached without affecting the unbleached.

After a man has had a little experience with the method he can tell by the color of the unbleached fiber whether he may safely continue the staining with the red for six or possibly seven minutes at 45° C. At first, however, it is better to follow the directions as given. It is of prime importance to wash out or neutralize every trace of alkali in the fibers, as the blue is decolorized by alkali.

This method of staining will in general give a distinction between pure cellulose fibers and those which contain lignin. Rags, bleached sulphite, soda pulp or any thoroughly bleached material are stained red while unbleached sulphite, mechanical pulp, jute, or any lignified materials are stained blue. The principal application lies in the estimation of unbleached pulp in book papers. A considerable saving can be made by using unbleached sulphite instead of bleached, hence it is important to know how much unbleached pulp there is in a sheet.

(To be Continued)

SIZING OF PAPER WITH HUMIC ACID

By Clarence J. West

Humic acid or humus is a complex, indefinite colloid which occurs in many types of soils, especially in peat, and to some extent in coal, sandstones, etc. It may be extracted from the soil by alkalies and is precipitated on acidifying this extract as a brown colloidal precipitate. A synthetic humic acid is supposed to be formed when sugar is boiled with hydrochloric acid. Ubbelohde (German patent 303,324) observes that when this precipitate is dried, it is no longer soluble in water; that is, it is an irreversible colloid. He proposes to use this property of humic acid in sizing of paper. Paper is impregnated with the aqueous or alkaline solution of humic acid and dried; the paper thus treated possesses the properties of a sized paper. It may also be used in the supplementary sizing of paper or of articles made of paper.

German patent 305,006 points out that it is not necessary to use a more or less pure humic acid or its salts, but that one may use the crude extract obtained by treating peat (turf), humus containing minerals, such as brown coal, etc., or similar materials, with alkali. These solutions, like humic acid solutions, may be precipitated with acids or metallic salts.

The dark color of these solutions may be removed, in part, by bleaching with chlorine or other bleaching agents (German patent 305,007). The bleaching operation causes several chemical and physical changes in the product. The partially or completely bleached product, or portions obtained by fractional precipitation, may be used as a sizing agent for paper.

Fractional extraction of the humus containing-metal with alkali, in which the material is extracted repeatedly with the same or different alkalies, gives a series of products which behave differently when used as sizing agents (German patent 305,008). These solutions are not clear but more or less turbid, due to the colloidal nature of the humus.

The sizing properties of humic acid or its salts is considerably improved by the addition of small amounts of such substances as water glass, wood tar, cumarone resin emulsion, plant slime, etc. (German patent 305,009). Rosin and animal sizing, added in small amounts, also improve the sizing properties of these products (German patent 305,010). A further improvement in sizing quality is brought about by the precipitation of the humic acid solutions with ferric sulphate in place of the ordinary precipitating mediums. (German patent 307,098).

Cut Ash Handling Costs

The Conveyors Corporation of American, 326 W. Madison street, Chicago, has issued an illustrated booklet entitled "Cut Ash Handling Costs" which should prove to be of value to the power plant executive interested in reducing the boiler room overhead.

The booklet is an exposition of the steam jet conveyor method of ash handling and contains a description of the conveyor and its method of operation. It also gives a list of unusual guarantees which the Conveyors Corporation are able to offer on the performance of their American Steam Ash Conveyor.

Among these guarantees are the following:

Cost per ton of ash handled.

Cost of repairs per ton of ash handled.

Non-packing of ashes in the ash storage tank.

Absence of dust at discharge.

Non-freezing of ashes in the tank.

Copies of the booklet may be had on application to the company at 326 West Madison street, Chicago, or to any of its representatives.

New French Mill to Make Paper From Grass

The French paper industry is gradually emerging from the crisis caused by the difficulty in obtaining raw material from abroad. Every effort is being made to discover new material with which to manufacture paper pulp. A new company has just been organized under the name of "L'Alfa," with a capital of 8,000,000 francs, according to a report to the Department of Commerce from Commercial Attaché Huntington, for the purpose of producing paper pulp from plants, and especially from esparto or alfa grass, which is found in great quantities in Algeria and Tunis. The main office is situated at 124 Rue de la Boetie, Paris.

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PRODUCTION OF SULPHITE ALCOHOL*

By Dr. R. Heinzelmann

(Concluded from Paper Trade Journal, May 25, 1922.)

A peculiar method for the preparation of alcohol from sulphite waste liquors is described by B. Landmark (Norwegian patent, April 19, 1912; Austrian patent 68,019, July 15, 1914). He states that it had not been possible, up to that time, to ferment waste liquors economically with ordinary yeast, that is, beer yeast. In order to render this possible the liquor must be subjected to a special treatment. He proposes to start the fermentation by the addition of a suitable nutrient material for the yeast, consisting of an easily fermentable sugar (galactose). This is formed by the hydrolysis of milk sugar. One may use milk or whey, which contains other important nutrient substances, such as nitrogen-containing compounds and phosphoric acid salts. If one uses skim milk, the sulphite liquor is treated with this and with dilute sulphuric acid, warmed until the casein is precipitated and then filtered from this precipitate.

The filtrate is then mixed with the sulphite liquor and a small amount of sulphuric acid and warmed in a vacuum apparatus. This brings about a hydrolysis of the milk sugar and also precipitates a part of the calcium salts, which retard the fermentation. The sulphurous acid (free and combined) which is liberated in this operation may be used for the preparation of new bisulphite. The treated liquor is then neutralized and cooled to fermentation temperature, when it may be fermented by ordinary yeast.

In case whey is used, the precipitation of casein is unnecessary.

The use of the above method is said to increase the yield of alcohol 20 per cent above that obtained by earlier processes, while the increase of alcohol due to the presence of the milk sugar is very small.

Landmark proposed still another method in Norwegian patent of Sept. 25, 1913; Austrian patent 75,456 (Mar. 15, 1916). He modifies the previous method, which consisted in concentration of the liquor after neutralization of the free sulphurous acid, in that he concentrates before neutralization. The liquor is blown directly from the digester into a vacuum apparatus and concentrated to a sixth or seventh of its original volume, which removes not only the free sulphurous acid but also that loosely combined with the lime and lignin. The liquor is then neutralized as usual.

W. Kiby has discussed at some length the question of the waste sulphite liquor and its utilization in *Chemiker-Zeitung* for 1915 (Nos. 34-35, 42, 45, 48, and 55-56). He states that the amount of fermentable material present in the liquor is from 1.5 to 1.6 per cent; it consists, according to investigations of Lindsey and Tollens in 1881, of hylose, mannose and galactose. The small amount of fermentable sugar in the waste liquor is due, according to them, to the decomposition of the larger part of the sugar during the time necessary for the liberation of the cellulose by the digestion process.

Kiby comments as follows on Landmark's method: The yeast slowly settles to the bottom of the fermenting vats due to a lack of aeration of the liquor and because of the slow process (4 days) and the slight carbon dioxide evolution due to the small amount of sugar. The yeast is not, therefore, as in the ordinary fermentation, driven to the surface from time to time by the gas evolution, and thus brought into contact with the oxygen of the air, but the action takes place almost entirely under the surface of the liquid and in an atmosphere of carbon dioxide. This is one of the causes of the slow progress of the fermentation. Strong aeration is disadvantageous in that it increases the impurities present in the alcohol by oxidizing it to aldehyde.

In order to maintain a permanent distribution of the active yeast in the liquor, Kiby uses two methods. One consists of a very mild aeration, so that the yeast is kept in motion and the carbon dioxide is removed. The other is an indirect aeration, in that the liquor is kept in motion by a slowly moving stirrer. These, in a measure, accelerate the otherwise slow fermentation.

Kiby proposes the following method for the removal of the sulphurous acid: The removal of the sulphurous acid should be as complete as possible, because of the fermentation which is to follow, that is, it should extend to the bound acid as well. This may be obtained by the use of sulphuric acid, which will also cause the separation of the calcium salts. Sulphuric acid is added in such amounts that the liquor has a slightly acid reaction (favorable for the fermentation), corresponding to about 0.025 per cent sulphuric acid. One may first neutralize the liquor with lime sludge and then acidify slightly with the sulphuric acid. The removal of the sulphurous acid should be associated with the concentration of the liquor, since in this way the heat is economically used and also because the concentration of the liquor decreases the size of the fermentation vats. For this purpose a multiple evaporator in combination with a distillation column may be used. The concentrated liquor is then treated with lime until the sulphuric acid content approximates 0.025 per cent.

The yeast which is formed during the fermentation may be used as the nutrient material for the yeast in a new fermentation; for this purpose it is added to the hot liquor after being freed from sulphurous acid and before treatment with lime.

Erik Hägglund, in his work "Die Sulfitablauge und ihre Verarbeitung auf Alkohol," which appeared in 1915, critically examines the most important methods of treating sulphite liquors before their fermentation, and bases his criticisms largely upon the results of large scale experiments. The above mentioned method, that is, treatment of the liquid with sulphuric acid, is held to be impracticable, since it is not possible to lower the sulphurous acid content to that point necessary for successful fermentation without adding a very considerable excess of sulphuric acid, which must then be neutralized. A further disadvantage of the method is the fact that the harmful, non-volatile acids are not removed.

If one uses lime as the neutralization medium with simultaneous stirring of the mass with a stream of air, the lime destroys a part of the sugar content of the liquor as soon as this becomes alkaline. It is true that, because of the vigorous stirring of the mass by the stream of air, the alkali is soon neutralized by the acid liquid, but it requires only a very short time for the alkalinity to destroy a considerable amount (between 5 and 10 per cent) of sugar. In addition to this there is the further disadvantage that it is difficult to clarify the liquor treated in this way, and the resulting turbidity influences the fermentation and subsequent distillation.

The author recommends the use of freshly slaked lime in combination with calcium carbonate for the neutralization. The liquor is pumped to the top of a high tower of 100 cubic meter capacity, built of reinforced concrete, while at the bottom of the tower a stream of air is introduced by means of a compressor. This oxidizes and to a large extent destroys the sulphurous acid and other reducing substances contained in the liquid and at the same time intimately mixes the liquid with the neutralization product. The use of oxidation catalyzers (manganese or iron salts) such as those used by Gesellschaft Ethyl (see first installment) is entirely unnecessary, a fact proven experimentally. A suitable amount of freshly slaked lime (about 300 kg.) and, after half an hour, the necessary amount of very fine limestone meal, are then added. After the neutralization mud has settled to the bottom of the tower, the neutralized liquid is drawn off to a tank where the

*Der Papier-Fabrikant, 20,438-443 (April 9, 1922). Translated by C. J. West.

settling is completed. The completely clear liquid is then cooled and transferred to fermentation vats.

Kaserer (Austrian patent, Nov. 2, 1916; German patent 317,998, Oct. 30, 1917) claims that the sulphite waste liquor, either in its original or concentrated state, is a suitable agent for acidifying molasses or other materials, since it not only acts as an acidifying agent, but also contains fermentable sugars and, in addition, because of its content of sulphurous acid and phenols, suppresses undesirable side fermentations. This is specially true for molasses, since this material lacks certain mineral matters, because of the manner of its preparation, which are supplied by the waste liquors.

A very similar method has been patented by Mizajski (German patent 329,111, July 25, 1917). In this patent sulphite waste liquor and molasses are mixed, without any special treatment of either component, in such proportions, preferably in the hot, that a neutral or slightly acid reaction results. This mixture may be fermented without the addition of special nutriment material. The concentration of the mixture (100 kg. molasses and 80 kg. sulphite liquor) is brought to 20 to 25° Blg. (?) by the addition of water.

A. V. Jernberg has proposed the use of calcium cyanamide as a neutralizing agent for sulfite liquors (German patent 319,929, June 9, 1916). By its use, not only is the free acid completely bound but the process is facilitated by the presence of two acid-binding groups, calcium and ammonia. Besides this one adds a substance which facilitates fermentation in that it is a nutrient substance for yeast. One may add the calcium cyanamide alone or in mixtures with other neutralizing substances in the dry state or after a preliminary treatment with water. The liquor may be treated in any desired way before the addition of the cyanamide; for example it may be treated with sulphuric acid and concentrated. It is specially desirable to heat the liquor in vacuum, in order to remove the free acid. During the operation of neutralization of the liquid with calcium cyanamide, gases, such as carbon dioxide, may be introduced. In this way ammonia is liberated while the calcium carbonate which is formed acts as the neutralizing agent.

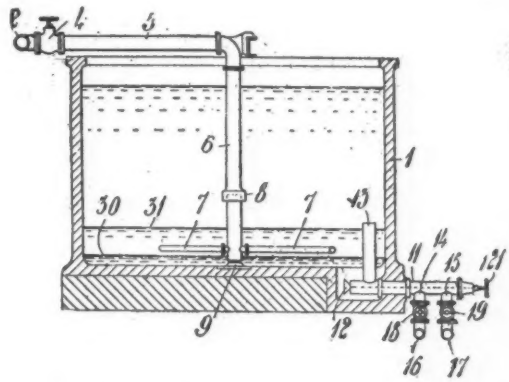
L. Jacoby (German patent 307,383) believes that the liquor, even after the removal of the free sulphurous acid and neutralization, contains substances (resinous and lignin compounds) which are detrimental to the fermentation process. He found that these substances may be removed by treating with a small amount of adsorbing material, such as kaolin, humin, "kolozit," animal charcoal, colloidal kieselguhr, etc. The following method is given: The liquor, after removal of the sulphurous acid and neutralization, but before filtration of the mud, may be treated with 0.5 to 1 per cent of kaolin in the cold, thoroughly mixed, and after settling, filtered. Or the neutralized liquor may first be filtered, then treated with 2 to 3 cc. humin per liter of liquor, a small amount of heavy metal salt (aluminium or iron sulfate) added to complete the flocculation of the humin and then filtered.

According to the additional patent 310,318 (Feb. 9, 1918) the adsorbent may be added before neutralization as well as after. For example, one may stir 1 part of 10 per cent humin solution into 500 parts of liquor, add 1 part of 10 per cent alum solution, neutralize with chalk at 50° C., filter and ferment with beer yeast at 28° C.

II. The Fermentation of the Treated Liquor

The fermentation of sulphite waste liquor is not economical if carried out in the ordinary way, because of the low sugar content and the large volume of liquid to be handled at one time, according to the firm A.-G. Ethyl (Swedish patent, Feb. 6, 1912; Austrian patent 63,560 of Oct. 1, 1913). In order to operate economically the so-called *uninterrupted* fermentation is necessary, in which the yeast or a part of the liquid used in the fermentation is used in starting the fermentation in another vat. Fermentation vats of large dimensions (at least 100 cubic meters content and with a surface of about 25 square meters) are required. In vats of this size the ordinary methods of mixing the liquor and yeast do not apply, because the usual stirrers cannot be used.

The following vat and method of working is planned to secure a good mixing of the liquor and yeast without the use of stirrers and also provides means for securing a good, active yeast for each fermentation. The vat (of concrete) has an inlet tube for the liquid to be fermented (2, 4, 5, 6) which ends, at the bottom of the vat, in a horizontal tube (7), the two ends of which are unequal in length and so arranged that the liquid flows through them in a tangential direction. The tubes (6 and 7) may also be arranged to rotate.



Each vat has an outlet (17, 11) connected by the valves 18, 19 to the two tubes 16, 17 and has two openings 12, 13. Opening 13 is placed a certain distance above the floor of the vat, while opening 12 is on the floor of the vat and may be opened or closed by the hand valve 121. The individual vats are connected with each other by the general filling tube 2, while the outlet tubes 16 and 17 are connected to common tubes below the vats.

When the fermentation in any particular vat is completed, the less active yeast sinks to the bottom of the tank or vat, forming a layer 30, while the still active yeast, capable of producing further fermentation, is found in the liquid just above this layer (31). One first removes the fermented liquid which covers the layer 30, 31 by means of opening 13 through the tube 16 and the valve 18. Next the layer 30, which is no longer capable of further action on sugar, is removed by means of opening 12 through tube 17. Now there remains in the vat only the active yeast layer 31, which can be used for the following fermentation. Fresh liquor may be introduced through the tube 2, 4, 6, which, entering through 7, stirs up the layer of yeast 31 and intimately mixes it with the incoming liquid.

According to Landmark (*Chem.-Zig.*, 1915, p. 98) it is possible to acclimatize the yeast to the sulphite mash if it is first grown in a malt mash and sulphite mash gradually added in increasing amounts. In the course of 5 to 6 days the yeast may be added to the sulphite vats.

Kiby (*Chem.-Ztg.*, 1915, p. 352) recommends carrying out the fermentation in such a way that it is complete in 24 hours. This involves the use of a higher temperature, the use of a more concentrated liquor, the continual suspension of the yeast in the fermenting liquor by means of a very slight aeration and the cultivation of suitable yeasts.

Detailed directions for the fermentation process are to be found in the above mentioned work of Hägglund, the first edition of which appeared in 1915, the second in 1921. The sulphite liquor, containing insufficient amounts of the nutrient materials, nitrogen and phosphoric acid, is treated with such; nitrogen is added in the form of amino compounds or ammonium salts and phosphoric acid as acid salts of the alkalies or alkaline earths. All the substances lacking in the sulphite mash are found in Bauer's yeast ex-

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tract, which is prepared by the self-digestion of waste beer yeast at 40-50° C. It can be used with advantage in the fermentation of the sulphite mash. An essentially cheaper nutrient mixture is prepared by mixing ammonium salts and calcium phosphate with the final addition of a small amount of yeast extract.

The yeast used for this purpose must be particularly resistant. Special types of yeast have been developed by the Instituts für Gärungsindustrie in Berlin. By suitably carrying out the fermentative process one may so accustom the yeast to the fermentation substrate that it will give a 10 per cent higher yield of alcohol than a yeast not so adapted.

Attempts to adapt the dextrin-fermenting molds (for example, *Saccharomyces Logos* of Laer, and other), in order to secure a more complete fermentation of the considerable amount of dextrin present in the liquor, have thus far not given the desired results.

The fermentation vats for sulphite liquor have very large dimensions, up to 250,000 liters, though most are of 100 cubic meters capacity, since in the larger vats the supervision is easier and it is simpler to maintain a constant temperature than in small vats.

The use of the so-called "continuous fermentation" has proved expedient. This can be carried out in a variety of ways. The following has proved the best in the experience of the writer:

A portion of the fermenting liquid from the initial vat, in which fermentation is started by means of pure yeast, is removed as soon as active fermentation has started, to another vat, both vats filled with fresh mash, etc. It is important to avoid the dead point in the fermentation process. This occurs if the mother yeast is not treated, immediately at the close of the fermentation, with fresh mash. The fermenting temperature in the sulphite brewery is between 29 and 30° C. It departs from this only by about 1° during the 70 or 80 hours of the process.

A modification of the continual process for sulphite liquors has been patented by A.-G. Th. Goldschmidt (Austrian patent 83,876 of Aug. 15, 1920). The sulphite liquor is first treated with such a quantity of slaked lime that only the free and easily bound sulphurous acid is neutralized and precipitated as calcium sulphite. Then sufficient limestone, chalk or other agent is added so that the liquor possesses the desired acidity. The neutralization is carried out without aeration but with the aid of stirrers. The liquid is then cooled by flowing over a graduation apparatus and the fermentation carried out in two steps. It is first pumped into a preliminary fermentation vat, mixed with the nutrient substances in the form of amides, ammonium salts and alkaline earth salts of phosphoric acid and fermented with yeast until about a third of the sugar has been changed, requiring usually about 24 hours. At this point about a half of the contents of the vat are pumped into a second vat and the fermentation completed, while the first vat is filled with fresh unfermented liquor.

While in all the above discussed processes care has been taken to see that the sulphurous acid, which is supposed to be harmful to the course of the fermentation, has been removed as completely as possible R. H. McKee (British patent 120,520, of May 15, 1918) makes the observation that a certain amount of free sulphurous acid is not disadvantageous to the fermentation provided a stream of air is blown through the fermenting liquor. Therefore the waste liquor is freed of a part of the sulphurous acid by means of a current of air or steam, with or without previous heating. The amount of acid remaining in the liquor should not exceed 0.35 g. per liter. The liquor is then cooled to 27° C, yeast added and the fermentation conducted at 27-28°. During the entire time of the fermentation a moderate stream of air is blown through the liquid, which removes a part of the free sulphurous acid. In order to avoid loss of alcohol the air is passed through water or aqueous sulphurous acid, which absorbs the alcohol.

III. Distillation of the Fermented Liquor

The fermented sulphite liquors contains, in addition to the usual impurities present in fermented mashes, such as aldehydes and fusel oil, a not inconsiderable amount of methyl alcohol, smaller amounts of organic acids (formic and acetic acids), acetone, furfural, and at times some sulphurous acid.

A part of these impurities may be removed, according to A.-G. Ethyl (Swedish patent 37,266 of Jan. 4, 1912) by the direct introduction of soda into the distillation apparatus or by the passage of the dilute alcohol vapors through a special purification apparatus containing soda solution.

If one wishes to obtain a pure spirit from the sulphite liquor, in place of a crude spirit containing more or less of the above named impurities, the so-called continuous combined distillation-rectification apparatus may be used, in which the distillation column gives crude spirits, which is then directly refined in the rectification apparatus.

Kiby (*Chem.-Ztg.* 1915, p. 307) recommends the use of a multiple pre-evaporator, such as is used in the sugar industry, in which the fermented liquor is concentrated from one to two-thirds before it is transferred to the distillation apparatus. The same apparatus might be used for the concentration of sulphite liquors before the fermentation.

At first the continuous distillation-rectification apparatus of the firm Gebr. Avenarius, Berlin, was almost exclusively used for the distillation of fermented sulphite liquors, because the interior was completely enameled and therefore not affected by the acid sulphite liquors and their vapors. Later, however, Hagglund showed that ordinary cast iron apparatus might be used.

A special form of treatment of fermented sulphite liquors previous to distillation is due to A.-G. Ethyl (Austrain patent 77,284, Aug. 15, 1918). They observed that the liquor, especially because of its carbon dioxide content, showed a tendency to foam, and it therefore appeared to be important to remove this carbon dioxide before the liquor was subjected to distillation. This was accomplished by atomization; the liquid was thrown by means of a centrifugal pump with great force against a plate at right angles to the liquid stream, with the result that it was broken up into fine drops and exposed to the action of the air.

IV. Obtaining By-products

In addition to the recovery of volatile by-products by means of the continuous distillation-rectification apparatus, such as methyl alcohol, aldehyde, fusel oil, acetone, etc., it is possible to obtain other products from the fermentation residue.

Landmark (*Chem.-Ztg.* 1915, p. 98) reports the preparation of a "cell pitch," which may be used as a fuel and for briquetting purposes, by further concentration of the slops.

According to Kiby and to Hägglund, the dry distillation of the residue leads to the production of ammonia or cyanogen, or, since the nitrogen compounds are present in the form of amino-acids or ammonium salts, and the material contains, in addition, phosphoric acid, it may serve as a nutrient material for bacteria.

Pacific Mills Buy Big Timber Tract

[FROM OUR REGULAR CORRESPONDENT.]

MONTREAL, Que., July 3, 1922.—The Pacific Mills, Ltd., of Vancouver, has purchased 90 square miles of timber on Skidegate Inlet, Queen Charlotte Islands. The timber will be logged and rafted to the paper plant at Ocean Falls. The purchase price was $500,000.

The Western Holding and Investment Corporation of Toronto has acquired the plant at Port Mellon, Howe Sound, B. C., of the Western Canada Pulp and Paper Co., Ltd. The plant produces 40 tons of sulphate pulp per day.

Pulp and paper activities in the Province of British Columbia now represent an investment of $42,000,000, and require one-fifth of the entire cut of lumber. The production of pulp and paper is 800 tons per day.

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IMPRACTICABILITY OF STANDARDIZING FELTS

By Wm. H. Lee, Manager, Lockport Felt Co.

We have heard quite a little recently about standardization of sizes and grades of paper makers' felts, and the writer of this article thinks perhaps there may be some logic in the theory as regards standardization of sizes, but that it is quite impossible to standardize on grades.

A paper makers' felt is a very specially made mechanical cloth, constructed to meet a particular condition on a particular paper machine, designed for a definite purpose and to accomplish a definite result. A felt made to make a certain grade of paper in one mill will not always answer to make exactly the same grade of paper made in another mill.

This is due to the fact that the conditions at the two mills are usually different although both making practically the same grade of paper.

Variation in Felt Making Machinery

In one mill the wet or making felt is run at a certain speed, in the other mill at a different speed. One mill may have its machine equipped with rubber rolls, the other mill with other kinds of rolls. One mill may have the press rolls on the machine set at a certain pressure, the other mill at a different pressure. One mill may have machines equipped with suction rolls, the other with suction boxes, or none at all. One mill may have machine equipped with a certain number of cylinders, the other with machines with more or less cylinders. One mill may have the cylinders driven, the other has the felt turn them. One mill may work the wet felt hard, and second press lightly, the other mill vice versa. One mill may use only one second press felt, the other mill two or more. Top felts and how they are made and handled on the machine also have a bearing on the kinds of other felts used on a machine in order to accomplish definite results. And *water*, one of the all important factors is usually of different degrees of hardness, temperature and character in different mills located in different parts of the country. Nearly every machine tender seems to have some little knack all his own he instinctively uses in handling felts on a paper machine. The kind and the way in which the whipper roll is operated often has a bearing on the use and kind of felts necessary for the felt manufacturer to make in order to meet certain conditions.

Mill Conditions are Different

There are many other facts I could mention to show that the conditions at different mills vary, and in fact I believe that a close check up of paper mills would disclose the fact that there are no two mills operating under exactly the same conditions and I believe that I am safe in making the statement that in mills where there are more than one machine, and these machines making the same grade of paper, that the machine may operate under somewhat different conditions.

Take the case of two board machines in the same mill and making the same grade of paper; unless these machines are the same in size, speed, number of cylinders; and in fact are exact duplicates and operating under practically the same conditions, the same grade of felt will not usually give the same results and the felt maker often finds it necessary to furnish two differently constructed felts to give the same results on two machines in the same mill, where the machines are of different types and operating under different conditions.

I am a strong believer in co-operation and in the exchange of information between manufacturers in the same industry, and also between allied industries but I also believe that in the case where such a special article as a paper maker's felt is involved, that neither the felt manufacturer or the paper manufacturer should become over-enthused over the matter of standardization of felts, and especially as it refers to grades.

First Standardize the Size

There is possibility some logic in the theory of a standardizing on sizes, and size will *have* to standardize before standard grades should even be thought of.

It is a fact that during the unusual war time that substitution of sizes and in some cases grades were resorted to, and good results obtained, but users could not always be choosers during those times and they put up with emergencies then that they would not even consider during these present times of close competition.

The felt maker is in the best position to be of maximum service to the Paper Manufacturer only, when the felt maker is acquainted with all the facts he needs to know covering the conditions at the paper mill where he is supplying felts, and the felt maker knowing these conditions is in a position to design and construct the proper felt to meet them, and as stated before in this article, it is very rarely conditions are exactly the same in different mills.

Felt Maker's Questionnaire

Following is a sample of information the felt maker should have and is I believe used generally by all Manufacturers of paper maker's felts:

Name of Company.....Address.....Date.....
Manager ..... Supt. ..... Buyer .....
Style of felt:—
Top.....Bottom.....1st. Press.....2nd. Press.....3rd. Press.....
Type of Machine:—
(Cyl.; Fourd.; Harper; Yankee).....If cyl. how many cyls.....
No. Machine.....Speed.....How are cyl. driven.....
Width of Press rolls .....
Kind of Paper.....Finish required.....
Suction box or Suction roll.....How many per felt.....
Kind of Press roll.....Top.....Bottom.....
Raw Stock .....
Water conditions .....
Remarks: .....
.....

In addition to the above it is often necessary for the felt maker to send his expert to the paper mill to work out with the practical paper maker some particular condition at that mill and design and build a felt to meet that condition and a felt made under these conditions in all prabability would not work satisfactorily in another mill making the same or similar grades of paper.

Each Grade Has Separate Function

In conclusion therefore, and speaking from a standpoint of a felt manufacturer I can hardly reconcile my best judgment to a programme of standardization of grades of felts for the reasons referred to above and further, a felt is made for a certain purpose, to operate under certain and often peculiar conditions, and to give definite results, and like grades of felts will not give like results operating under unlike conditions.

There are of course many cases where the same grades of felts will answer at dieffrent mills but, there are more cases where the same grades will not answer due to varying conditions and conditions at paper mills it would seem to me would have to be somewhat standardized before grades of felts can be standardized.

The proposition of standardization of grades of felts sounds all right but it is not practical.

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CURRENT PAPER TRADE LITERATURE

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts of Literature of the Technical Association of the Pulp and Paper Industry

Comparative Action of Heat on Cellulose, Hydrocellulose, and Oxycellulose, and the Characterization of Hydrocellulose by Dry Heat.—Ed. Justin-Mueller. *Bull. Soc. Chim.*, (IV), xxix, 987-988 (1921); *Chem. Soc. Abs.*, cxxii, Pt. 1, 11, (Jan, 1922).—Hyrdocellulose caramelises at a lower temperature than oxycellulose and at a much lower temperature than cellulose. If the specimen under examination is submitted to dry heat, it will assume a brown color at 130-150 degrees, at which temperature oxy-cellulose shows at most only a pale yellow color and cellulose no change at all.—A. P.—C.

Conversion of Cellulose Into a Biose Anhydride.—Kurt Hess. *Ber.*, liv(B), 2867-2885 (1921); *Chem. Soc. Abs.*, cxxii, Pt. 1, 12 (Jan. 1922). The author gives the result of an investigation into the action of acetyl chloride, acetyl bromide, benzoyl bromide, thionyl chloride, and propionyl bromide and absolute hydrogen haloids on cotton cellulose, wood cellulose, acetylcellulose and ethylcellulose. The investigation was undertaken to decide whether cellobiose is the fundamental unit in the structure of the cellulose molecule and dextrose is formed therefrom, or whether dextrose itself is also an essential factor in the formation of cellulose.—A. P.—C.

Preparation and Alkyl Interchange of Cellulose Esters: Cellulose Stearate and Laurate.—Ad. Grun and Franz Wittka. *Z. anagew. Chem.*, xxxiv, 645-648 (1921); *Chem. Coc. Abs.*, cxxii, Pt. 1, 114 (Feb. 1922).—The attempt to find a simple method for the preparation of cellulose esters of the higher fatty acids has led to observations on the interchange of alkyl groups between cellulose esters and alcohols, and between alkyl esters and cellulose. Cellulose esters of the higher fatty acids are formed by acylation of cellulose with an acid chloride and pyridine. The properties of cellulose di-stearate and di-laurate are given. The stability of cellulose esters increases with their molecular weight.—A. P.—C.

Requirements of a Brief Critical Monograph on the Chemistry of Cellulose.—Louis E. Wise. N. Y. State College of Forestry, Syracuse, N. Y. *Paper*, xxix, No. 15, 26-28 (Dec. 14. 1921).—The article outlines the type of material and data that should be incorporated into a monograph on cellulose. Many of the older terms that still appear in the cellulose literature should be deleted or redefined. Proper weight should be given to carefully selected fundamental data and to the work of critical investigators. All hypotheses dealing with the constitution of cellulose or its derivatives should be subjected to close scrutiny, and those based on good experimental data should receive emphasis. Recent work on the colloidal properties of cellulose should be included. The monograph besides being critical should be suggestively written so as to stimulate research. A brief volume with a good bibliography appears to be more desirable than a series of monographs.—A. P.—C.

Acetolysis of Spruce Pulp.—Louis E. Wise and Walter Russell. *J. Ind. Eng. Chem.*, xiv, 285-287 (April, 1922).—Acetolysis of spruce sulphite pulp, when carried out as in the case of acetolysis of cotton, yields appreciable amounts of cellobiose octa-acetate. The yield of cellobiose appears to depend on the alpha-, or normal, cellulose content of the pulp, rather than on the so-called "total cellulose." The cellobiose reaction furnishes another link in the chain of evidence that the normal cellulose of spruce wood is chemically similar, if not identical, with that of cotton.—A. P.—C.

The Strength of Paper Making Fibers.—Raymond Fournier. *Papier*, xxv, 17-19 (Jan., 1922).—According to an article in *Kunststoffe*, cotton fiber has a mean tensile strength of 42 kg. per square mm. section, flax 72 kilos, and pine cellulose 30 kilos. H. Lecomte, by means of a very delicate apparatus devised by himself (not described) tested the strength of individual cotton fibers and found values from 3.2 g. for Tinnevelly to 10.5 g. for hard Peru. Taking an average of 6 g. and an average diameter of 0.025 mm. the tensile strength is 12.245 kilos per square mm. Tests by Forbes on various textile fibers gave results varying from 2.6 kilos for *Sause veria* to 6.2 kilos for European hemp. These results are lower than those of Lecomte, probably because the former tested the individual fibers, while Forbes and other investigators worked on ropes or twines which had a certain amount of empty spaces; and also these ropes failed not only through the breaking of the fibers dut due to the sliding of the fibers on one another. The strength of a sheet of paper or of pulp is much less than that of the fibers of which it is composed, as it is due to the ability of the fibers to resist sliding against one another. This is quite apparent on examining a torn sheet of paper, when it will be noted that the fibers have not been broken but merely pulled apart.—A. P.—C.

The Comparative Values of Different Specimens of Iodine for Use in Chemical Measurements.—C. W. Foulk and S. Morris, Ohio State Univ., Columbus, Ohio. *J. Am. Chem. Soc.*, xliv, 221-229 (Feb., 1922).—Some new forms of apparatus for the preparation and handling of pure iodine are described. The hygroscopic properties of iodine are discussed. A suggestion is made that solids like iodine that have a measurable vapor pressure at room temperature possess peculiar absorptive properties due to the fact that a fresh surface is being continually exposed.—A. P.—C.

Paper Work of the Bureau of Standards.—*Paper Trade J.*, lxxiii, Nos. 25, 47-49 (Dec. 22, 1921); *Paper*, xxix, Nos. 12-15, 20 (Jan. 18, 1922).—Report of Director Stratton of the U. S. Bureau of Standards on the work of the Paper Section for the fiscal year ending June 30, 1921. The work covered finding a suitable method of detecting sulphate and sulphite fibers in paper, testing paper bags for lime and cement, testing the absorbent quality of blotting paper, method of testing the sizing and tearing strength of paper, compiling a circular on paper testing methods, manufacture of satisfactory paper for electrical condensers, finding the most suitable paper or cotton bags as substitutes for burlap sand bags, waterproofing paper bags, substituting sulphate for sulphite in the manufacture of news print, investigation of methods of testing carbon paper, routine testing, and information supplied to the general public.—A. P.—C.

Method of Producing Pulp.—Can. Patent No. 214,492, B. M. E. L. Possanner von Ehrenthal and M. von Halle, Nov. 29, 1921.—Vegetable materials which are difficult to treat by alkaline processes and which yield unbleachable pulp by the sulphite process are cooked with sulphite liquor having as high a content of combined sulphur dioxide as can be obtained without precipitating calcium monosulphite (3 to 4 per cent lime, 4 to 5 per cent sulphur dioxide) at a maximum pressure of 5 to 6 atmospheres, and maximum temperature of 125 to 130 degrees C., for 6 to 7 hours. The cooked material is defibered and washed, and treated for 1 or more hours at 80 to 90 degrees C. in a bleaching engine with a 5 to 10 per cent sodium carbonate (or better sodium hydroxide) solution. The resultant pulp can be easily bleached in the usual manner. The waste liquors from both the acid and the alkaline treatments are worked up for by-products. The precipitate obtained on neutralizing the alkaline waste liquor can be used as a cattle food.—A. P.—C.

Acidproof Mortar.—Can. Patent No. 214,511, A. W. Ekstrom, Dec. 6, 1921.—The mortar is made up of Portland cement 8 to 16 parts by volume, chamot 3 to 7 parts, alum slate 1 to 4 parts, to which may be added suitable filler. It is mixed with a suitable

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quantity of waterglass of suitable concentration just before using. The chamot renders the cement waterproof, the alum slate makes the mass ductile, and the waterglass converts the mass into a paste, acts as a binder, and keeps the mass homogenous even after drying. —A. P.—C.

Acidproof Mortar.—Can. patent No. 214,512, P. G. Ekstrom, Dec. 6, 1921.—The mortar is made up of blast furnace slag 55 to 78 parts of weight, litharge 12 to 30 parts, pot stone 10 to 15 parts, with or without filler. The mixture is stirred with waterglass just before using. The litharge or other lead oxide, e.g., mud from accumulators, forms acidproof silicates with the silica of the slag. The pot stone, which can be replaced by asbestos, magnesia, or other "fat" magnesium minerals, makes the mass ductile. By suitably proportioning the constituents the mass can be made so as to have the same expansion coefficient as iron. After setting the mass is very elastic and can be alternately heated and cooled without breaking.—A. P.—C.

Process for Converting Esparto and Other Grasses Into Paper Pulp.—Fr. Patent No. 526,765, Societe Maunoury & Cie., July 8, 1921. *Papier,* xxiv, 545 (Dec., 1921).—The chlorophyll, gums, fats, waxes, and pecto-cellulose are eliminated by treating with an alkaline liquor (sodium or potassium hydroxide or carbonate) containing a calculated amount of "pectose" (depending on the nature of the plant and the amount of pectose compounds it contains) which is rendered soluble by the addition of 0.05 to 0.15 per cent of disodium hydrogen phosphate (Na_2HPO_4). The material is then washed and subjected to the action of nascent chlorine gas or of one of its oxidizing salts. The resultant pulp is finally treated with an alkaline liquor at 100 degrees C. to dissolve out the silica.—A. P.—C.

Improvement in Esparto Cooking.—Alfred W. Smith.—*Paper,* xxix, No. 8, 22-24 (Oct. 26, 1921).—A plea for a more thorough investigation of the relationship between the strength of liquor, steam pressure, and time of cooking.—A. P.—C.

Agriculture and Paper Pulp. The Small Scale Manufacture of Straw Pulp by a Continuous Process.—Raymond Fournier. *Papeterie,* xliv, 2-10 (Jan. 10, 1922).—Owing to the seasonal nature of agricultural work, agricultural workers are employed but part of the time, and consequently very easily drift into cities where they find permanent employment. To help overcome this the author suggests that during the late fall and winter the farmers transform their straw into paper pulp, which may be of varying quality according to the treatment to which it is subjected. The process described is simple, does not require very complicated apparatus, and is continuous. The equipment comprises a (preferably two-story) building with power, heating system, and water system, a straw cutter, duster, automatic straw distributor, cooker for the continuous cooking of the straw (by the soda process), disintegrator, apparatus for recovering the spent liquor, washer, machine for making the pulp into sheets, and, if need be, dryers for drying the pulp. The process, which is entirely continuous, is described at some length. The yield can vary from 37 to 70 per cent, according to the amount of caustic used, the time of cooking, and the method of operating the disintergrator, the lower yields giving a higher grade and better finished pulp.—A. P.—C.

Steam Consumption in Paper Mills.—R. L. Weldon, Three Rivers Pulp & Paper Co. *Pulp and Paper,* xx, 45-49 (Jan. 19, 1922); *Paper Trade J.,* lxxiv, Nos. 6, 43-47 (Feb. 9, 1922).—The most important use of steam in the paper mill is that of drying the paper, and intimately linked with it is the question of power, since in many mills it is customary to generate a certain amount of the power by means of steam, the exhaust being used to dry the paper. The important factors affecting steam consumption for drying are moisture content of the paper entering the dryers, efficiency of the condensate evacuating system, ventilation, condition of dryers both inside and outside, amount of dryer surface, felt dryers, clothing. A formula is given expressing the ideal steam consumption per pound of paper as on the machine for a given condition. Heat balances have been worked out for three systems: live steam drying, steam turbine, and uniflow engine; showing under what conditions each one is most advantageous.—A. P.—C.

Powdered Coal as Fuel in Steam Plants.—Henry Kreisinger and John Blizard, U. S. Bureau of Mines. *Pulp and Paper,* xx, 79-82 (Feb. 2, 1922); *Paper Ind.,* iii, 1633-1637 (March, 1922).—A higher thermal efficiency can be attained in steam plants by burning coal in the powdered form than by burning it by any other method, provided the furnace and burner have been properly designed. The article describes various furnace designs and briefly discusses the ease of following variations in load and the power and coal required to prepare the pulverized cal.—A. P.—C.

Generation of Steam by Electricity.—F. T. Kaelin, Shawinigan Water & Power Co., Montreal. *Can. Chem. Met.,* vi, 59-62 (March, 1922).—The electric steam generator is the result of a condition which leaves available for a portion of the day or year an excess of power over and above that required for manufacturing purposes. The article illustrates the usefulness and limitations of such apparatus in supplementing or even replacing boiler plants. The efficiency of electric steam generators is about 96 to 99 per cent, being higher for large sizes. They may be divided into two main and distinct classes: generators in which the current passes through a combination of metallic resistors, and generators in which the water itself forms the electric resistance. Generators of the first type are suitable only for voltages up to about 500, and have been built up to 1,500 kw. capacity. The space occupied is relatively large as compared with the steam generating capacity. Generators of the second type can use comparatively high voltages (up to 12,000 volts), obviating the use of step-down transformers and reducing the cost of installation. Changes in load are followed by regulating the electric input by varying the electric resistance, either by changing the submersion of the electrodes or varying the specific resistance of the water by suitably adjusting the amount of water fed to the generator and by controlling the water discharged. The outstanding advantages of this type of generator are: simplicity of construction, compactness, ease of control, and low cost per kw. capacity. The relation between the temperature and resistance of water is given by $R = \frac{C}{\sqrt{T}}$, in which R = ohms per cubic inch, T the temperature of the water in degrees C., and C a constant depending on the impurities present in the water. It was first thought that the investigation of the relation between the temperature and resistance of different kinds of water would be of very great importance, but it has been found by experience in the operation of the steam generator that the resistance of the water could be controlled over a considerable range by discharging a suitable amount of water from the generator, the purer the water the less had to be dischaged to maintain a suitable conductivity. The construction of a 5,000 k.w. generator is described at length, and also the arrangement of a three-tank unit to form one generator which may have capacities up to 25,000 kw. The operating advantages are mentioned.—A. P.—C.

Electric Steam Boiler.—Fr. Patent No. 530,005, Societe Sulzer Freres, Dec. 12, 1921. *Technique Moderne,* xiv, 142 (March, 1922). —The current is passed through the water, which thus constitutes the resistor. The steam production is approximately proportional to the surface of the electrodes immersed in the water, which is regulated by means of a float, either in the steam generator proper or in a separate chamber communicating with the former, the water level being raised or lowered by lowering or raising the float.—A. P.—C.

The International Chemical Index and the Reproduction of Documents.—J. H. Frydlender.—*Rev. Prod. Chim.,* xxv, 73-78 (1922).—A general discussion of the problem of searching the bibliography of a given subject, and of obtaining original articles

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or documents which may need to be consulted. The various photographic methods used or proposed for the reproduction of articles or of patent specifications are reviewed, discussing their merits and drawbacks. The author suggests that the best solution of the problem would be that periodicals should run off a certain number of copies of each issue on a copying paper, film, etc., so that when any issue is out of print any article in that issue, or the whole number if required, can be easily and cheaply reproduced by one of several processes (autographic, heliotype, blue-print, etc.). These special copies could be either kept in the offices of the respective periodicals or sold to central bibliographic agencies which would pay a royalty on the articles reproduced. Frylender also suggests that this method be used for the reproduction of patent specifications, and that specifications of the patents of all countries could be kept in and distributed from the patent office of each country.—A. P.—C.

The Technical Paper and Its New Relation to Industry.—H. C. Parmelee. *J. Ind. Eng. Chem.* xiv, 153-156 (Feb. 1, 1922); *Chem. Met. Eng.*, xxvi, 197-200 (Feb. 1, 1922).—In order to better fulfill its function of service and leadership, the modern technical paper has extended its scope of usefulness and supplemented its technology with the economics and business of the industry it serves.—A. P.—C.

Need of Contact Between Cost and Technical Men.—Fred C. Clark. *Paper,* xxix, No. 10, 29-30 (Nov. 9, 1921); *Paper Trade J.,* lxxiii, No. 20, 38, 40 (Nov. 17, 1921); *Pulp and Paper,* xix, 1211-1212 (Dec. 1, 1921).—The fundamental ideas in plant operation are lowering costs and improving qualtiy. A plant that works out a method that enables it to work more economically, resulting in lower costs, almost invariably discovers that by so doing it is possible to increase quality, which is due to the fact that the close study required in reducing costs brings to light additional knowledge and increase in quality. The changes which bring about lower costs and improved quality are effected by the technical man; but their effects are measured by the cost man, and close co-operation between the two is necessary to obtain best results.—A. P.—C.

Meeting of the Woodlands Section of the American Paper and Pulp Association, Chicago Nov. 1-4, 1921.—*Paper,* xxix, No. 11, 9-12 (Nov. 16, 1921).—A brief account of the meeting.—A. P.—C.

Annual Meeting of the Canadian Pulp and Paper Association, Montreal, Jan. 23-27, 1922.—*Pulp and Paper,* xx, 84-88, 121-123, 141-144 (Feb. 2, 16, 23, 1922); *Paper Mill,* xlv, No. 4, 8-16, 52-56 (Jan. 28, 1922); *Paper Trade J.,* lxxiv, No. 5, 18-24, 26, 28 (Feb. 2, 1922); *Paper Ind.,* iii, 1547 et seq., (Feb, 1922).—An account of the meeting giving the address of retiring president Wilson, and reports of the chairman of the News Print, Chemical Pulp, Mechanical Pulp, Book and Writing Paper, Board, Wrapping Paper, Felt, Coated Paper, Woodlands, and Technical Sections, and of the Traffic Department and the Joint Committee on Technical Research.—A. P.—C.

Paper Mill Management.—E. Arnould. *Papier,* xxiv, 489-491 (Nov., 1921).—A brief and general discussion of the qualifications required of a good paper mill manager.—A. P.—C.

Forest Products Laboratory Opportunities.—*Paper,* xxix, No. 21, 7-9 (Jan. 25, 1922).—An outline of the work already accomplished by the U. S. Forest Products Laboratory and of the benefit to the industries which it serves if its work were expanded.—A. P.—C.

Humidity Control.—U. S. A. Patent No. 1,409,221, A. W. Lissauer, assignor to W. L. Fleisher & Co., Inc., March 14, 1922.—The air is admitted to a chamber in which it is thoroughly sprayed and then impinges on baffles or "eliminators" which remove the excess water which has a temperature equal to the wet bulb temperature of the air at this point. The spray water is circulated repeatedly, and is heated by means of thermostats which are immersed in the "reacted" water.—A. P.—C.

List of Abbreviated and Full Titles and of Addresses of the Journals from Which Abstracts Have Been Prepared for This Issue.

Ber. .....Berichte der deutschen chemischen gesellschaft, F. Oppenheim, Lohmühlenstr. 67, Berlin, S. O. 36, Germany.
Bull. Soc. Chin.....Bulletin de la Société Chimique de France. Masson & Cie., 120 Boulevard St. Germain, Paris (6°), France.
Can. Chem. Met.....Canadian Chemistry and Metallurgy. The Westman Press, 57 Queen St., W., Toronto, Ont., Canada.
Chem. Soc. Abs.....Journal of the Chemical Society (London). Abstract Gurney & Jackson, 33 Paternoster Row, London, E. C. 4, England.
J. Am. Chem. Soc.....Journal of the American Chemical Society. Charles L. Parsons, 1709 G St., N. W., Washington. D. C.
J. Ind. Eng. Chem.....The Journal of Industrial and Engineering Chemistry. Charles L. Parsons, 1709 G St., N. W., Washington, D. C.
Paper .....Paper. 251 West Nineteenth St., New York City.
Paper Ind. .....The Paper Industry. 356 Monadnock Block, Chicago, Ill.
Paper Mill.....The Paper Mill and Wood Pulp News. L. D. Post, Tribune Building, 154 Nassau St., New York City.
Paper Trade J.....Paper Trade Journal. 10 East Thirty ninth St., New York City.
Papeterie .....La Papeterie. 9 Rue Lagrange, Paris (5°), France.
Papier .....Le Papier. 16 Rue du Rocher, Paris (8°), France.
Pulp and Paper.....Pulp and Paper Magazine of Canada. Gardenvale, Que., Canada.
Rev. Prod. Chim.....La Revue des Produits Chimiques. 54 Rue de Turbigo, Paris (3°), France.
Technique Moderne.....La Technique Moderne. 49 Quai des Grands-Augustins, Paris France.
Z. angew. Chem.....Zeitschrift für angewandte Chemie. Verlag für angewandte Chemie, G. m. b. H., Nürnberger Str. 48, Leipzig, Germany.

Felt Economies From the Use of Ball Bearings

By John Kepke, Jr.*

Mechanical deterioration of felts ranks with chemical deterioration in shortening felt life, and is probably chiefly to blame in most cases of excessively rapid wear. Elimination of mechanical abrasion will consequently reduce to a minimum the loss from cases of unduly short felt life, and will materially increase the "normal" life of felts.

The drag which causes the mechanical wear results from bearing friction in the various rolls driven solely by felt pull. The number of such rolls, and the considerable weight of some of them, make this friction reach a very high total when plain bearings are used. An unfortunate complication here is the fact that the longer felts, which are the more expensive, are especially subjected to the effects of frictional drag. Deterioration follows not only from abrasion but from excessive strain as well. Each roll adds its resistance to increase the felt tension until the total stress produces a harmful stretch in the felt.

These considerations apply to the wet felts of multi-cylinder board machines and to the exceedingly long press felts now used to an increasing extent. They also apply to a considerable extent even to dryer felts on very high speed machines. In fact, the deleterious effects of bearing friction on all felts are greatly aggravated by increase of speed.

In consequence of the facts discussed above, practically all felt carrying rolls in both press and dryer sections on modern high speed machines are ball bearing equipped.

Ball bearings are also common on wet ends of cylinder machines, both slow and fast—the application to cylinder molds being the commonest and one of the oldest uses of ball bearings in the paper industry. Couch rolls, return felt drums, squeeze rolls, and primary press rolls are other locations where ball bearings have frequently been used, both on new machinery and as change-overs to existing plain bearing machines. If a suction roll is used for the return felt drum ball bearings are particularly desirable.

In all these various applications ball bearings have served both to reduce felt costs and to minimize emergency shut-downs for felt replacement.

*S. K. F. Industries.

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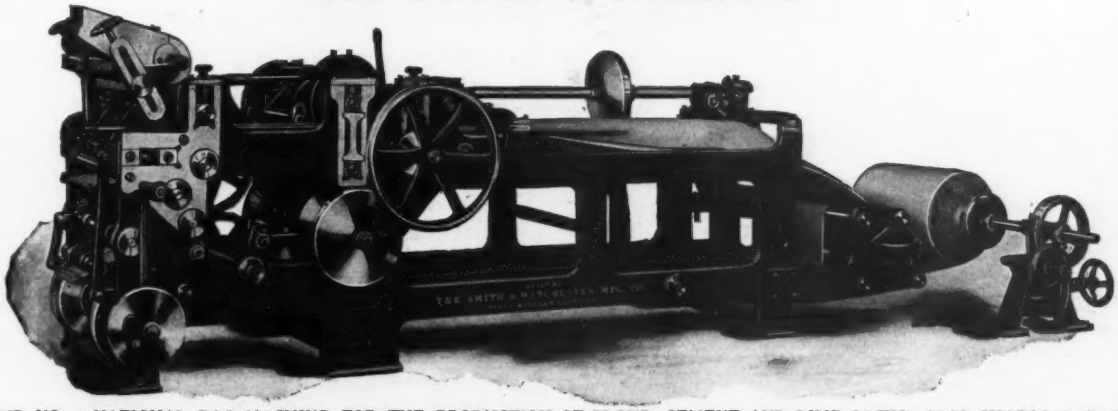

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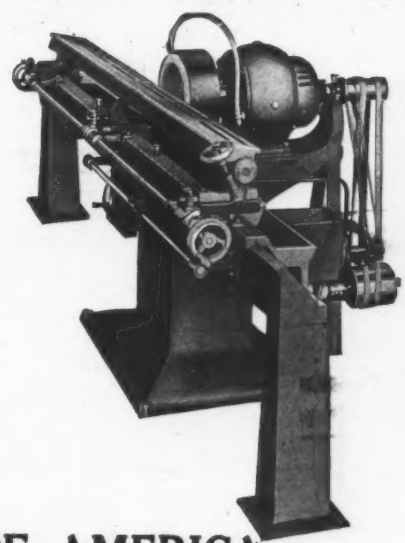

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GERMAN PAPER MARKET IN CRITICAL CONDITION

By S. Ferenczi, Editor Papier Zeitung, Berlin, Germany

[FROM OUR REGULAR CORRESPONDENT]

Berlin, Germany, June 2, 1922.—The German paper market has reached a critical point. The heaps of paper money which the government must print in order to meet all requirements, especially the payments for "reparations" and the costs of the occupying army along the Rhine, are always increasing. The buying power of this paper money gets smaller, at the same rate, and so month by month all the elements of paper making, viz. wood, coal, wages and everything else, get more expensive. No wonder then, that month by month the prices of chemical and mechanical pulp and of all sorts of paper, cardboard and paper board turn higher by 30 or 40 per cent, and that the present prices are about three or four times as high as they were half a year ago.

All other goods have shown the same development. The paper makers might have no cause to be concerned, if the home customers were able to buy their whole output. But they are not. The working capacity of the paper mills is now about as high as it was before the war; the mills have invested the greater part of their war and post-war earnings (and they were not small) in enlarging their plants and making them up-to-date. Before the war about 20 per cent of the German paper was exported, and at this time the home consumption was very great. Paper was cheap and everybody wasted it. During the war paper got scarce and its economical use was daily preached to the public. The effect was prompt. What the scarcity did in the war-time, the high prices do now; and the high postal rates have also their part in the shrinking of paper consumption. Thus the paper mills are bound to export a great part of their output, and they can export, the low exchange of the mark helping them. But with the present high prices, and they will go still higher, exportation must become rather difficult. The whole business depends on the exchange value of the mark. A big rise of this value would throw thousands of paper mill workmen out of work.

Newspaper Publishers Want Cheaper Paper

The newspaper publishers had succeeded in getting from the Reichstag (Parliament of Germany) a unanimous motion urging the government to make paper for news and trade papers cheaper for the publishers. The government proposed to lower the railway rate for printing paper and to levy a tax of 60 per cent of the export profits of the paper and pulp makers and so spend the revenue from this tax for cheapening the paper to the publishers. Paper and pulp makers, paper jobbers and exporters and all the paper converters opposed this proposition with utmost energy and displayed their arguments in the trade papers and in petitions. They were perfectly right in saying that the new tax would kill the export, and that it is unfair to fine a special class of citizens (the makers of printing paper) in order to help another class of citizens (the newspaper publishers). The government had to confess in the Parliament, that the tax could do no good and withdrew the bill, promising other measures of help to the publishers.

American Writing to Exhibit at Boston

[FROM OUR REGULAR CORRESPONDENT]

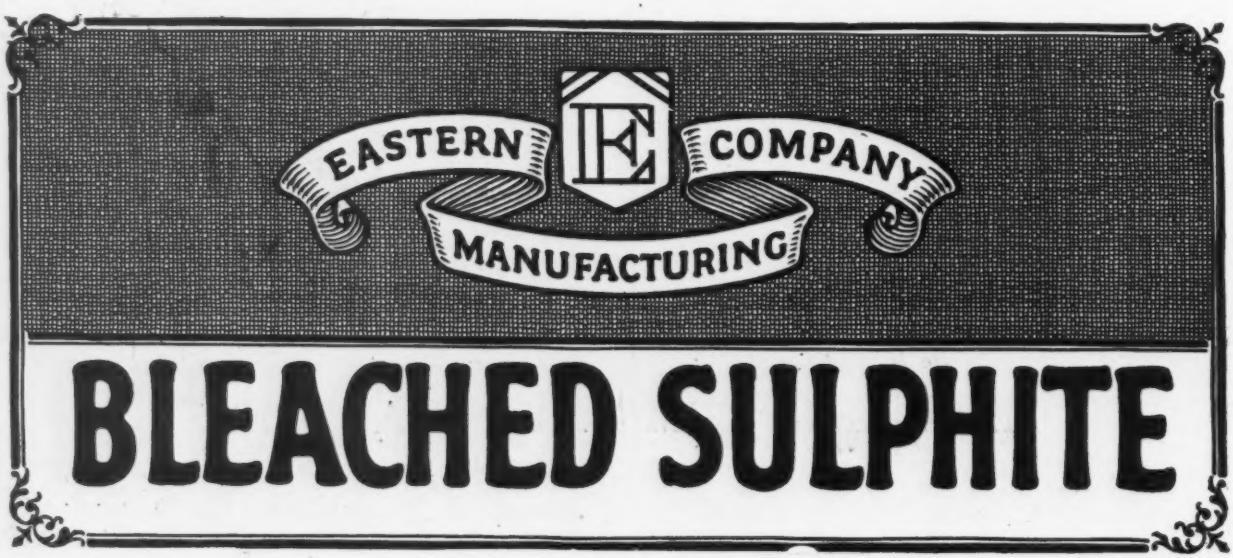
Holyoke, Mass., July 6, 1922.—Elaborate preparations are being made by the American Writing Paper Company for its educational paper-making show to be presented in Boston in connection with the Graphic Arts Exposition, during the week of August 28 to September 2.

Several very interesting improvements have been made on the famous "baby" paper-making machine, the smallest device of its kind in the world, which is to be operated during the exhibit. Among other additions is the installation of a complete tub-sizing equipment in miniature. By its means it is possible for the layman to obtain a knowledge of the method by which paper is sized.

Another added feature includes the layboy constructed on the same minute proportions of the "baby" machine. This improvement enables the demonstrators to show clearly just how paper is cut and trimmed.

One of the most recent developments is a model loft-drying equipment, which will be operated alongside of the paper-maker. This has been designed and built on the same scale as the little Fourdrinier.

Supplementing the unique manufacturing equipment, the American Writing Paper Company will have an exhibit to show other important steps in the process of paper-making and testing. To accomplish the latter purpose a research and testing laboratory, fully equipped, will be a prominent feature of the display.



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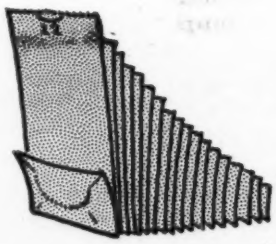

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New York Market Review

OFFICE OF THE PAPER TRADE JOURNAL,
MONDAY, July 3, 1922.

With the majority of New York paper houses celebrating the grand and glorious 1st, 2nd, 3rd and 4th of July, the remaining days of the past week have been largely consumed in preparing for the holidays and recovering from the effects of them. Business has, in consequence, practically remained at a standstill with almost no change in the various markets from the week preceding. Raw materials have continued to advance in price with a steady persistence and paper stock is no exception to this rule. Waste papers and both new and old cotton rags continue to exhibit a hardening tendency and prices have been bolstered up from time to time due to the diminishing available supplies.

During the past week the New York paper market could hardly be described as having retrogressed; the period of renewed prosperity showed no falling off; there was merely a natural easing up due to the paucity of working days in the week. From reports of many large houses, usiness was carried on at double time during these days. Merchants were kept active filling the orders of their customers and many mills were pressed to get their quotas into consuming channels on schedule.

News print paper is still the glaring high-light of the entire paper market and all indications point to a record consumption for the first half of 1922. Mills are reported to be booked straight through July and August and on into September. Consumers are requiring more of the product each week and the demand is steady. It is this stability in the news print market that is most encouraging to producers. Present transactions are not made merely to meet a sporadic buying period. The paper is going into consumption steadily and surely and there can be no let-up in production until publishers are fully stocked.

The demand for book paper is gradually increasing, but the keen competition in the market has made it difficult to handle the commodity at a reasonable profit. Many mills have strived rather to under-quote their competitor than to establish a selling price which would accrue to them a normal profit. In this manner, quantities of machine-finished and coated book have been thrust on a listless market at low price levels. Printing costs have also been prohibitive, especially in the matter of labor, in the vicinity of New York. It is said that several publishers and a limited number of the larger printing establishments have either moved or are contemplating a move to some other lacality.

Fine paper has been holding its own and business is still pouring in in goodly volume. Both domestic and foreign demands have improvod on many grades of fine paper and high grade sulphite bonds have shown considerable activity of late. Most New York houses do not expect a slump of any consequence to occur in the fine paper market this summer. It is the popular belief that the mending of conditions will carry on into the fall months without any serious interruption.

Tissue has been stepping along lively in recent weeks and from all signs it is getting back on its feet again. Both the textile and the shoe industries are buying in regular quantities again and the filling of long depleted stocks has kept tissue mills and dealers active.

Domestic kraft manufacturers are still faced with a serious problem in the great quantities of Scandinavian kraft that are being imported into the country each week. They have slashed prices to meet the incoming flood of cheap kraft, and consumers have taken advantage of the lower quotations to stock up. There is a pronounced activity in the market due to this stimulus, but the matter of meeting the price levels of Norwegian and Swedish producers, who have the benefit of cheap labor, is a problem which will have to be solved before the kraft market fully revives.

Paper box manufacturers are kept busy filling the orders which continue to come in from all quarters and board prices have, consequently, shown a stiffening tendency. Producers express more confidence in the board market by stocking up in anticipation of next fall's business, and all grades of board have taken a decided turn for the better.

Mechanical Pulp

Groundwood prices still appear to be firming and grinders are seldom if ever forced to the expedient of shading on quantity purchases. Both board plants and news print establishments are coming into the market strong for mechanical pulp and this has done much to strengthen the general tone of the market. There are no signs to the effect that this market will suffer during the summer months, as is generally the case, but, judging from the strides which the news print industry is taking, the reverse is apt to hold.

Chemical Pulp

The effect of the general stiffening in the prices of imported chemical pulp has been noticeable in the domestic market. Competition has relaxed somewhat and American manufacturers, freed from the intense strain of an era of continued price cutting to meet competitive levels, have booked up enough business to keep them operating full-blast well into the summer. Domestic No. 1 Bleached is moving well and the unbleached has exhibited considerable steadiness at the quoted price of $2.35 to $2.75, depending on the quality of the pulp.

Old Rope and Bagging

Manila rope prices are still firm and the demand continues unabated. No. 1 rope has been quoted as high as 6.00 cents a pound f. o. b. destination and the price of 5.50 cents has been the basis of many transactions during the last ten days. Bagging, on the other hand, shows no great improvement in demand, activity being so slight as to hardly demonstrate a market.

Paper Stock

Old papars have held in excellent demand for over a month, when the price advances first took effect. Since that time there has been a steady improvement in the undertone of the market until now when prices on many grades of old papers and those of wood pulp are in the same neighborhood. Soft white shavings have picked up to such an extent that they parallel hard shavings in price, and practically every grade is in active demand. The rag market is also progressing at a rapid clip. Roofing rags have been working steadily upward in price and the entire market has followed in the wake. New white shirt cuttings have been in good demand by writing paper mills and old thirds and blues have picked up proportionately. Consumers are finding difficulty in obtaining many of these grades at any price and available supplies are instantly taken up.

Twine

Dealers in twine feel that the break in this market has come at last and that from now on conditions will be for the better. This assumption has been warranted by the constantly improving demand for twines of all grades, together with the recent boost in prices of raw materials, raw jute especially. Consumers have been buying hand-to-mouth for such a long period in this market that some time is naturally required to develop confidence in the stability of prices.

John Matthews, Jr. to Head Paper Division

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., July 5, 1922.—The Department of Commerce on Saturday officially announced the appointment of John Matthews, Jr., formerly sales manager of the Miami Paper Company of West Carrollton, Ohio, as chief of the paper division of the department. This official announcement means, of course, that his final papers have been approved by the United States Civil Service Commission. Mr. Matthews will begin his work as chief of the division on August 1.

XUM

Market Quotations

Paper Company Securities

New York Exchange closing quotations July 3, 1922:

STOCKS	BID.	ASKED.
American Writing Paper Company, pref.	29	30
International Paper Company, com.	47	47½
International Paper Company, pref., stamped	66¼	68½
Union Bag & Paper Corporation	62	64

Paper

F. o. b. Mill.

Ledgers	10.50	@	30.00
Bonds	8.50	@	55.00
Writings—			
Extra Superfine	14	@	25
Superfine	13	@	20
Tub Sized	10	@	16
Engine Sized	9.00	@	15.00
News—f. o. b. Mill—			
Rolls, contract	3.50	@	3.75
Rolls, transit	3.50	@	
Sheets	4.00	@	
Side Runs	3.25	@	3.50
Book, Cased—f. o. b. Mill			
S. & S. C.	6.25	@	7.25
M. F.	6.00	@	7.00
Coated and Enamel	8.00	@	10.00
Lithograph	8.00	@	10.00
Tissues—f. o. b. Mill			
White, No. 1	.75	@	.80
Colored	1.00	@	2.00
Anti-Tarnish	.75	@	.80
Silver Tissue	1.50	@	2.70
Manila	.75	@	.80
Kraft—f. o. b. Mill—			
No. 1 Domestic	7.00	@	7.50
No. 2 Domestic	5.75	@	6.25
Imported	6.00	@	6.25
Screenings	2.50	@	3.50
Manila—			
No. 1 Jute	8.50	@	9.00
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.50	@	5.50
No. 2 Wood	4.00	@	4.50
Butchers	4.25	@	4.75
Fiber Papers—			
No. 1 Fiber	6.00	@	6.25
No. 2 Fiber	5.00	@	5.25
Common Bogus	1.75	@	2.25
Card Middies	4.00	@	5.00
Boards—per ton—			
News	35.00	@	45.00
Straw	40.00	@	45.00
Chip	32.50	@	40.00
Binders' Board	60.00	@	70.00
Sgl. Mla. Ll.Chip	52.50	@	62.50
Wood Pulp	75.00	@	90.00
Container	60.00	@	70.00
Wax Paper—			
Self Sealing White 28 and 30 lb. basis	10.00	@	11.00
Waxed Tissue	1.40	@	1.60
Glassine—			
Bleached, basis 25 lbs.	12.75	@	13.25
Bleached, basis 20 lbs.	13.75	@	15.25

Mechanical Pulp

(Ex-Dock.)

No. 1 Imported	32.00	@	38.00
(F. o. b. Pulp Mills.)			
No. 1 Domestic	28.00	@	34.00

Chemical Pulp

(Ex-Dock, Atlantic Ports.)

Sulphite (Imported)—			
Bleached	4.00	@	4.50
Easy Bleaching	2.85	@	3.10
No. 1 strong unbleached	2.50	@	2.75
No. 2 Strong unbleached	2.25	@	2.50
No. 1 Kraft	2.50	@	3.00
Sulphate—			
Bleached	3.90	@	4.00
(F. o. b. Pulp Mill.)			
Sulphite (Domestic)—			
Bleached	4.00	@	4.50
Strong unbl'chd.	2.60	@	2.80
Easy Bleaching Sulphite	2.60	@	3.10
News Sulphite	2.50	@	2.80
Mitscherlich	2.80	@	3.10
Kraft (Domestic)	2.50	@	3.00
Soda Bleached	3.50	@	3.75

Domestic Rags

New

Prices to Mill, f. o. b. N. Y.

Shirt Cuttings—			
New White, No. 1	10.25	@	11.00
New White, No. 2	6.00	@	6.50
Silesias, No. 1	6.00	@	6.50
New Unbleached	8.50	@	9.00
Washables	3.50	@	4.00
Fancy	5.00	@	5.50
Cotton—according to Grades—			
Blue Overall	5.50	@	6.00
New Blue	4.25	@	4.75
New Black Soft	3.00	@	3.25
New Light Seconds	2.75	@	3.00
O. D. Khaki Cuttings	3.25	@	3.60
Men's Corduroy	2.50	@	2.75
New Canvas	6.50	@	7.00
New Black Mixed Old	2.25	@	2.75
White, No. 1—			
Repacked	5.60	@	6.10
Miscellaneous	4.50	@	5.00
White, No. 2—			
Repacked	2.75	@	3.00
Miscellaneous	2.10	@	2.35
St. Soiled White	1.15	@	1.25
Thirds and Blues—			
Repacked	1.60	@	1.75
Miscellaneous	1.15	@	1.25
Black stockings	2.25	@	2.50
Roofing Rags—			
Cloth Strippings	1.10	@	1.15
No. 1	1.10	@	1.15
No. 2	1.00	@	1.10
No. 3	.65	@	.75
No. 4	.65	@	.75
No. 5A	.90		nominal

Foreign Rags

New Light Silesias	6.00	nominal
Light Flannelettes	6.75	nominal
Unbl'chd Cottons	7.50	nominal
New White Cuttings	9.50	nominal
New Light Oxfords	6.00	nominal
New Light Prints	4.50	nominal
New Mixed Cuttings	2.00 @	2.50
New Dark Cuttings	1.90 @	2.10
No. 1 White Linens	9.00 @	11.00
No. 2 White Linens	6.50	nominal
No. 3 White Linens	5.00	nominal
No. 4 White Linens	3.50	nominal
Old Extra Light Prints	2.00	nominal
Ord. Light Prints	1.75	nominal
Med. Light Prints	1.50	nominal
Dutch Blue Cottons	1.85	nominal
German Blue Cottons	1.50	nominal
Ger. Blue Linens	3.50	nominal
Checks and Blues	1.50	nominal
Dark Cottons	1.10 @	1.15
Shoppery	.90 @	.95
French Blues	2.00	nominal

Bagging

Prices to Mill f. o. b. N. Y.

Gunny No. 1—			
Foreign	.80	@	.85
Domestic	.80	@	.85
Wool, Tares, light	1.00	@	1.10
Wool, Tares, heavy	1.10	@	1.15
Bright Bagging	.90	@	1.00
No. 1 Scrap	.80	@	.90
Sound Bagging	.75	@	.85
Manila Rope—			
Foreign	5.00	@	5.25
Domestic	5.25	@	5.50
New Bu. Cut	1.80	@	1.90
Hessian Jute Threads—			
Foreign	2.00	@	2.50
Domestic	2.00	@	2.25
Mixed Strings	.75	@	.85

Twines

Cotton—(F. o. b. Mill)			
No. 1	.33	@	.35
No. 2	.31	@	.33
No. 3	.27	@	.29
India, No. 6 basis—			
Light	.18	@	.19
Dark	.18	@	.19
B. C., 18 Basis	.39	@	.41
A. B. Italian, 18 Basis	.51	@	.61
Finished Jute—			
Light, 18 basis	.26	@	.27
Dark, 18 basis	.27	@	.29
Jute Wrapping, 3-6 Ply—			
No. 1	.23	@	.24
No. 2	.31	@	.32
Tube Rope—			
4-ply and larger	.15	@	.17
Fine Tube Yarn—			
5-ply and larger	.19	@	.21
4-ply	.20	@	.22
3-ply	.20	@	.22
Unfinished India—			
Basis	.16	@	.17
Paper Makers Twine Balls	.13	@	.15
Box Twine, 2-3 ply	.17	@	.18
Jute Rope	.13	@	.15
Amer. Hemp, 6	.33	@	.35
Sisal Hay Rope—			
No. 1 Basis	.15	@	.17
No. 2 Basis	.13	@	.15
Sisal Lath Yarn—			
No. 1	.14	@	.15
No. 2	.11	@	.13
Manila Rope	.18	@	.19

Old Waste Papers

(F. o. b. New York)

Shavings—			
Hard, White, No. 1	3.90	@	4.10
Hard, White, No. 2	3.50	@	3.65
Soft, White, No. 1	3.55	@	3.65
Flat Stock—			
Stitchless	1.85	@	1.95
Over Issue Mag.	1.85	@	1.95
Solid Flat Book	1.75	@	1.85
Crumpled No. 1	1.25	@	1.35
Solid Book Ledger	2.00	@	2.50
Ledger Stock	1.75	@	1.95
No. 1 White News	1.70	@	1.80
New B. B. Chips	.60	@	.65
Manilas—			
New Env. Cut	2.40	@	2.60
New Cut No. 1	1.75	@	1.90
Extra No. 1, Old	1.50	@	1.60
Print	.90	@	1.00
Container Board	.65	@	.75
Bogus Wrapper	.60	@	.70
Old Krafts, machine compressed Bales	1.80	@	1.90
News—			
Strictly Overissue	.75	@	.85
Strictly Folded	.67½	@	.72½
No. 1 Mixed Paper	.55	@	.60
Common Paper	.35	@	.40

CHICAGO

[FROM OUR REGULAR CORRESPONDENT.]

Paper

F. o. b. Mill

All Rag Bond	35	@	40
No. 1 Rag Bond	30	@	35
No. 2 Rag Bond	18	@	20
Water Marked Sulphite	10	@	14
Sulphite Bond	9	@	12
Sulphite Ledger	12	@	13
Superfine Writing	18	@	24
No. 1 Fine Writing	14	@	22
No. 2 Fine Writing	12	@	20
No. 3 Fine Writing	8	@	12
No. 1 M. F. Book	6¼	@	7
No. 1 S. & S. C. Book	6¾	@	7½
Coated Book	8¾	@	10¾
Coated Label	8½	@	10½
News—Rolls, mill	3½	@	4½
News—Sheets, mill	3¾	@	4¼
No. 1 Manila	5	@	5½
No. 1 Fiber	4½	@	5
No. 2 Manila	4	@	4½
Butchers' Manila	4	@	—
No. 1 Kraft	6¼	@	7
No. 2 Kraft	5¾	@	6
Wood Tag Boards	4	@	—
Screenings	2½	@	—
Boards, per ton—			
Plain Chip	35.00	@	40.00
Solid News	40.00	@	45.00
Manila Lined Chip	45.00	@	52.50
Container Line—			
85 Test	55.00	@	60.00
100 Test	60.00	@	65.00
Binders' Board	75.00	@	—
Solid Wood Pulp	80.00	@	90.00
Straw Board	35.00	@	40.00
Filled Pulp Board	55.00	@	60.00

Old Papers

Shavings—			
No. 1 Hard White	3.50	@	3.75
No. 1 Soft Shav.	3.25	@	3.35
No. 1 Mixed	1.10	@	1.25
No. 2 Mixed	1.00	@	1.10
White Envel. Cuttings	3.50	@	3.75
Ledgers and Writings	1.75	@	1.85
Solid Books	1.50	@	1.60
No. 1 Books, light	.90	@	1.00
Blanks	1.75	@	2.00
Ex. No. 1 Manila	1.90	@	2.00
Manila Envelope Cuttings	2.00	@	2.10
No. 1 Manilas	1.00	@	1.10
Folders News (over issue)	.80	@	.85
Old Newspaper	.75	@	.80
Mixed Papers	.70	@	.75
Straw Clippings	.70	@	.75
Binders Clippings	.70	@	.75
Kraft	1.75	@	2.00
New Kraft Cuts	2.00	@	2.10
Roofing Stock, f.o.b. Chicago, Net Cash—			
No. 1	25.00	@	—
No. 2	23.00	@	—
No. 3	21.00	@	—
No. 4	21.00	@	—

PHILADELPHIA

[FROM OUR REGULAR CORRESPONDENT.]

Paper

Bonds	.10	@	.60
Ledgers	.15	@	.40
Writings—			
Superfine	.15	@	.20
Extra fine	.12	@	.22
Fine	.20	@	.30
Fine, No. 2	.20	@	.25
Fine, No. 3	.15	@	.20
Book, M. F.	.06	@	.09
Book, S. S. & C.	.08	@	.15
Book, Coated	.08	@	.15
Coated Lithograph	.10	@	.15
Label	.08	@	.15
News	.05	@	.07
No. 1 Jute Manila	.12	@	.13
Manila Sul., No. 1	.08	@	.08½
Manila No. 2	.07½	@	.08
No. 2 Kraft	—	@	.08½
No. 1 Kraft	—	@	.09½
Common Bogus	.02½	@	.03
Straw Board	35.00	@	45.00
News Board	32.50	@	35.00
Chip Board	27.50	@	32.00
Wood Pulp Board (Carload Lots)	90.00	@	100.00
Binder Boards—			
Per ton	$65.00	@	75.00
Carload lots	60.00	@	65.00
Tarred Felts—			
Regular	48.00	@	50.00
Slaters	54.00	@	56.00
Best Tarred, 1-ply (per roll)	1.35	@	1.50
Best Tarred, 2-ply (per roll)	1.00	@	1.15
Best Tarred, 3-ply	1.50	@	1.65

Bagging

F. o. b. Phila.

Gunny No. 1—			
Foreign	.75	@	—
Domestic	.70	@	—
Manila Rope	4.00	@	4.50
Sisal Rope	.75	@	.80
Mixed Rope	.75	@	.80
Scrap Burlaps	1.00	@	1.25
Wool Tares, heavy	2.50	@	2.75
Mixed Strings	.75	@	.80
No. 1, New Lt. Burlap	.75	@	.80
New Burlap Cuttings	1.75	@	2.10

Old Papers

F. o. b. Phila.

Shavings—			
No. 1, Hard White	4.00	@	4.25
No. 2, Hard White	3.50	@	3.75
No. 1 Soft White	3.35	@	3.50
No. 2 Soft White	2.00	@	2.25
No. 1 Mixed	1.50	@	1.75
No. 2 Mixed	1.00	@	1.25

(Continued on page 70)

XUM

Imports and Exports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING JULY 1, 1922

SUMMARY

Cigarette Paper.....15 cs.
Drawing Paper.....24 cs.
Wall Paper.....43 cs.
Printing Paper.....30 cs.
Filter Paper.....7 cs.
Packing Paper.....1,376 rolls.
Kraft Paper.....347 lbs.
Miscellaneous Paper.....34 cs.

CIGARETTE PAPER.

De Mauduit Paper Corp., Rochambeau, Havre, 15 cs.

DRAWING PAPER.

E. Dietzgen & Co., Manchuria, Hamburg, 24 cs.

WALL PAPER.

R. F. Downing & Co., M. Maru, Yokohama, 43 cs.

PRINTING PAPER.

Steiner Paper Co., Mt. Clay, Hamburg, 30 cs.

FILTER PAPER.

Zinckeisen C &o., Morristown, Hamburg, 7 cs.

PACKING PAPER.

Republic Bag & Paper Co., Morristown, Hamburg,, 1,329 rolls.

Ladenburg, Thalman & Co., by same, 47 rolls.

KRAFT PAPER

Hudson Trading Co., Saxonia, Hamburg, 347 bales.

PAPER.

J. Meer, Rochambeau, Havre, 22 cs.

American Shipping Co., Mt. Clay, Hamburg, 12 cs.

RAGS, BAGGING, ETC.

Castle, Gottheil & Overton, Westerdyk, Rotterdam 49 bls. paper stock.

R. F. Downing & Co., by same, 47 bls. rags.

G. W. Millar & Co., by same, 235 bls. paper stock.

Irving Nat'l Bank, France, Havre, 11 bls. rags.

Nat'l City Bank, Saxonia, Hamburg, 69 bls. rags.

Nat'l City Bank, by same, 20 bls. new cuttings.

Nat'l City Bank, Mt. Clay, Hamburg, 151 bls. rags.

Goldman, Sachs & Co., by same, 86 bls. rags.

Nat'l City Bank, La Lorraine, Havre, 93 bls. rags.

Kelly & Co., by same, 9 bls. rags.

Ladenburg, Thalman & Co., Morristown, Hamburg, 69 bls. rags.

Ladenburg, Thalman & Co., by same, 18 bls. flax waste.

Int'l Acceptance Bank, by same, 179 bls. rags.

Mechanics & Metals Nat'l Bank, Pt. Adelaide, London, 70 bls. rags.

Meyers, Lipman Co., Inc., by same, 59 bls. rags.

Chemical Nat'l Bank, Pr. Taft, Hamburg, 248 bls. rags.

Irving Nat'l Bank, Rochambeau, Havre, 40 bls. rags.

Irving Nat'l Bank, by same, 69 bls. waste.

OLD ROPE.

Amer. Exchange Nat'l Bank, Homeric, Southampton, 74 bales.

First Nat'l Bank of Boston, Luxpalite, Genoa, 100 coils.

American Exchange Nat'l Bank, Cameronia, Glasgow, 98 coils.

Ladenburg, Thalman & Co., Westerdyk, Rotterdam, 164 coils.

Follack Bros., by same, 32 coils.

WOOD PULP.

Castle, Gottheil & Overton, Morristown, Hamburg, 880 bales, 176 tons.

Brown Bros. & Co., Mt. Clay, Hamburg, 528 bales, 102 tons.

WOOD FLOUR.

A. Klipstein & Co., Westerdyk, Rotterdam, 390 bales.

PHILADELPHIA IMPORTS

WEEK ENDING JULY 1, 1922.

Castle, Gottheil & Overton, Morristown, Hamburg, 960 bls. wood pulp, 192 tons.

Republic Bag & Paper Co., by same, 230 rolls packing paper.

BOSTON IMPORTS

WEEK ENDING JULY 1, 1922

The Napier Dairy, River Trent, Buenos Aires, 70 bags casein.

CLEVELAND IMPORTS

WEEK ENDING JULY 1, 1922

S. Silberman & Co., Westerdlyk, Rotterdam, 116 bls. paper stock.

S. Silberman & Co., by same, 581 bls. shopperies.

BALTIMORE IMPORTS

WEEK ENDING JULY 1, 1922

Hudson Trading Co., Noruega, Christiania, 1,600 bales wood pulp.

The Czechoslovakian Paper Industry

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 14, 1922.—The Paper Division of the Department of Commerce has the following report regarding the Czechoslovakia pulp and paper trade.

The exports of pulp and paper from the Czechoslovakia are always in much greater volume than the imports. In the year 1921 imports and exports were as follows:

Czechoslovakian Imports and Exports of Paper and Pulp in 1921

Items	Imports		Exports	
	Short tons	Crowns[1]	Short tons	Crowns[1]
Pulp	4,041	10,154,000	35,994	211,419,000
"Raw" paper (not including cardboard)	1,844	16,846,000	41,716	273,625,000
Cardboard	2,634	7,599,000	6,186	16,130,000
Paper wares	1,353	18,458,000	2,459	30,202,000
Advertisements, placards, etc.	143	1,973,000	131	1,932,000
Total	10,015	55,030,000	86,486	533,308,000

[1]The present value of the Czechoslovakia crown is $0.0193.

Wrapping paper was the most important kind of paper exported from Czechoslovakia in 1921, both in tonnage and in value. The total exports of wrapping paper amounted to 21,225 tons, valued at 106,879,000 crowns. Of this amount Hungary received 5,047 tons; Austria, 4,288 tons; Poland, 2,226 tons; and the United Kingdom, 2,016 tons. The remainder went chiefly to Rumania, Yugoslavia, Germany, Italy, France, and Bulgaria.

Printing paper was second in importance among the paper exports. In 1921, 11,488 short tons of printing paper, valued at 60,133,000 crowns, were exported from Czechoslovakia. Hungary received more than one-fourth of this, with Rumania, France, and Italy ranking next as recipients of Czechoslovakian printing paper.

The total exports of writing paper amounted to 4,912 short tons, valued at 44,423,000 crowns. It went chiefly to Hungary, Rumania, and Austria. There were 1,951 short tons of cigarette paper, valued at 39,346,000 crowns, exported in 1921. Austria received the greater part of this.

The pulp exports of Czechoslovakia in 1921 amounted to 35,994 short tons, valued at 211,419,000 crowns. About four-fifths of this went to Austria, Germany, and the United Kingdom. France, Italy, and certain other countries received small amounts.

The Paper Situation in Poland

R. Y. Jarvis, American Vice Consul at Warsaw, Poland, writes to THE PAPER TRADE JOURNAL as follows:

"It may interest you to know that, according to latest reports, of the 17 paper mills in Poland 14 are now active, and produced in 1921 an average of 2,700 tons per month. The rate of production since the war has been improving, but still amounts to not even a third of the pre-war production. The demand is estimated to be about 120,000 tons a year not even half of which is met by the supply at present, and large quantities have to be imported. There are five factories manufacturing wood pulp in Poland, and the larger paper mills have special sections for its manufacture.

Nuera Paper Co. Sold

[FROM OUR REGULAR CORRESPONDENT.]

SCHENECTADY, N. Y., July 3, 1922.—The plant of the Nuera Paper Company at Hadley was sold on a mortgage foreclosure action brought by the Adirondack Trust Company of this city. The property was bid in for $200,000 for the benefit of bondholders.

Quality: It means more than price

The BC PULPS INC

"Hafslund Bear" **"Forshaga"**

BLEACHED SULPHITE

"Klarafors"

EASY BLEACHING SULPHITE
STRONG UNBLEACHED SULPHITE

"Hurum" **"Bamble"**

EXTRA STRONG KRAFT; BLEACHED AND BLEACHABLE SULPHATE

"Edsvalla" 50% MOIST **"Dejefors"** DRY

WHITE SPRUCE—GROUND WOOD

Tonnage available on dock for prompt shipment

THE BORREGAARD CO., INC.
200 FIFTH AVENUE NEW YORK CITY

M. G. & Unglz. Kraft Paper No. 1

of highest Swedish quality

Shipment from Gothenburg in the first half of August

Lowest Market Prices

Please ask us for samples and quotations.

FERNSTROM PAPER CO., Inc.
Scandinavian Paper Mills' representatives
150 Nassau Street New York City
Tel. Beekman 5891

TAYLOR, BATES & CO.

Members New York Stock Exchange
Members New York Cotton Exchange

100 Broadway, New York
Tel. Rector 1140

BONDS STOCKS COTTON	Bought and Sold on Commission

BRANCH OFFICE
41 EAST 42nd STREET
Tel. Murray Hill 5631

1864 1922

"EXCELSIOR" FELTS

for every grade of

PULP AND PAPER

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Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
CAMDEN, MAINE

SOLD BY
BULKLEY, DUNTON & COMPANY
75-77 Duane St., N. Y., and direct

Miscellaneous Markets

OFFICE OF THE PAPER TRADE JOURNAL,
MONDAY, July 3, 1922.

ALUM.—Alum is easy and there is a slow but regular turnover at the quoted prices of 3.50 cents a pound for lump, 3.65 cents for ground and 3.90 cents for powdered.

BLEACHING POWDER.—A considerable strengthening in this market in recent weeks has brought about a noticeable firmness in the price of 1.60 cents a pound. Bleach supplies are scarce and consumers are still using regular amounts of the commodity.

BLANC FIXE.—This product has not undergone any price variations in the past week, the range of $37.50 to $45 a ton still being given for the pulp. Dry blanc fixe is holding steady at 3.50 to 3.75 cents a pound.

CASEIN.—Still the most turbulent item among the various markets in which the paper maker is interested, Argentine casein continues to be listed at the stiff price of 10.00 to 14.00 cents a pound. Even before the announcement of the tariff endorsed by the Senate placing a duty of four cents a pound on casein, Europe was cornering the bulk of the Argentinian supply at 11.00 cents a pound, or approximately one cent per pound more than American importers were willing to pay.

CAUSTIC SODA.—Cessation of export demand for caustic has brought spot supplies down to a low level of prices. The market is easing up a little and some shading on the price of 3.40 to 3.50 cents a pound has been in evidence.

CHINA CLAY.—The new price schedule has gone into effect for English China clay, reducing quotations approximately three shillings per long ton. The imported now averages $13 to $18 per ton, domestic washed $8 to $10 and unwashed, $6 to $8.

LIQUID CHLORINE.—The chlorine market is not too strong and quantity consumers have been practically naming their own prices. 4.50 cents a pound for tank car quantities may be taken as an average, while in the 100-pound cylinders prices have fluctuated from 4.50 to 7.00 cents or more.

ROSIN.—Prices hold firm in the rosin market, $5.20 being listed for barrels of 280-pounds.

SALTCAKE.—Producers have no spot stocks of saltcake on hand at the present time, all production being taken care of by committments. Prices may be expected to advance over the quoted $20 to $22 per ton for acid cake and $18 for chrome cake.

SATIN WHITE.—Similar, in many respects to the market for blanc fixe, this commodity is holding its own and is still selling for 1.50 to 2.00 cents a pound.

SODA ASH.—This commodity is still being quoted at $1.20 for the 48 per cent basis and spot $1.25 for the same basis in carload lots bringing the price to approximately $1.51 per cwt., works.

SULPHUR.—Brimstone is reported to be moving in regular quantities and the price has remained solid at $18 to $20 per ton, New York.

STARCH.—Demand for starch has not fallen off to any great extent in paper-making channels, and prices are quoted at 2.47 and 2.75 cents a pound for respective bag and barrel lots of the paper maker's grade, with pearl starch listing at 2.37 and 2.65.

SULPHATE OF ALUMINA.—Manufacturers of aluminum sulphate have a large demand at this time from water filtration plants. This together with the heavy supplies withdrawn by paper mills has greatly diminished what supplies were on hand. Sulphate of Alumina is quoted at 1.40 to 1.50 cents a pound and iron free at 2.15 to 2.35.

TALC.—This commodity is moving in comparatively good quantities despite the season of the year. The market has a sound undertone and talc is quoted at the firm price of $15 to $17 a ton.

Market Quotations

(*Continued from page 67*)

Solid Ledger Stock.	2.25	@	2.50
Writing Paper.....	1.80	@	2.00
No. 1 Books, heavy.	1.60	@	1.75
No. 2 Books, light.	1.40	@	1.50
No. 1 New Manila.	2.75	@	3.00
No. 1 Old Manila..	1.50	@	1.75
Container Manila..	1.00	@	1.10
Old Kraft.....	2.00	@	2.25
Overissue News....	.75	@	.80
Old Newspaper....	.50	@	.60
No. 1 Mixed Paper.	.45	@	.50
Common Paper....	.40	@	.50
Straw Board, Chip.	.40	@	.45
Binders' Bd. Chip.	.40	@	.45

Domestic Rags—New.
Price to Mill, f. o. b. Phila.

Shirt Cuttings—			
New White, No. 1	.10	@	.10¼
New White, No. 2	.05½	@	.06½
Silesias, No. 1...	.05½	@	.06
New unbleached..	.09	@	.09½
Washables	.03½	@	.03¾
Fancy	.04¼	@	.04¼
Cottons—according to grades—			
Blue Overall.....	.04½	@	.05¾
New Blue.....	.02	@	.02¼
New Black Soft.	.03	@	.03¼
New Light Sec-			
.....	.02	@	.02¼
Khaki Cuttings...	.02¾	@	.03¼
Corduroy	.02	@	.02½
New Canvas.....	.07	@	.07½
New Black Mixed	2.75	@	3.00
Old			
White, No. 1—			
Repacked	.06	@	.06½
Miscellaneous ...	.04½	@	.04¾
White, No. 2—			
Repacked	.03	@	.03½
Miscellaneous ...	.02¾	@	.02¾
Thirds and Blues—			
Repacked	1.65	@	1.80
Miscellaneous	1.40	@	1.55
Black Stockings....	1.75	@	2.25
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.90	@	1.00
No. 3.....	.80	@	.90
No. 4.....	.80	@	.90
No. 5A.....	nominal		
B.....	nominal		
C.....	nominal		

BOSTON

[FROM OUR REGULAR CORRESPONDENT.]

Paper

Bonds	.06¾	@	.60
Ledgers	.07½	@	.35
Writings	.07½	@	.22½
Superfine	.15	@	.22½
Fine	.15	@	.18
Books, S. & S. C...	.07	@	.10
Books, M. F.....	.05¾	@	.07½
Books, coated	.08	@	.10
Label	.08½	@	.09½
News sheets	3.75	@	—
News, rolls	3.50	@	—
Manilas—			
No. 1 Manila ...$6.75		@	
No. 1 Fibre	.07½	@	—
No. 1 Jute.....	8.50	@	8.75
Kraft Wrapping ...	.06¾	@	.07
Common Bogus ...	3.00	@	

Boards

(Per Ton Destination)

Chip	$35.00	@	37.50
News, Vat Lined...	36.50	@	38.50
Wood, Vat Lined..	47.25	@	
Filled News Board..	37.50	@	
Solid News Board..	42.00	@	45.00
S. Manila Chip....	52.50	@	
Pat. Coated.....	70.00	@	75.00

Old Papers

Shavings—			
No. 1 Hard White	3.70	@	3.90
No. 1 Soft White	3.30	@	3.45
No. 1 Mixed....	1.50	@	1.75
Ledgers & Writings	.03¼	@	—
Solid Books	1.85	@	2.10
Blanks	1.30	@	1.45
No. 2 Books Light.	.60	@	.70
Folded News, over-			
issues $11.25		@	12.50
Mixed paper.....47.50		@	50.00
Gunny Bagging....	.70	@	.75
Manila Rope.....	4.25	@	4.50
Common Paper....	.35	@	.40
Old News.....	.80	@	
Old Kraft.....	1.75	@	1.80

TORONTO

[FROM OUR REGULAR CORRESPONDENT.]

Paper

(Mill Prices to Jobbers f. o. b. Mill)

Bond—			
Sulphite	.11	@	.12½
Light tinted.....	.12	@	.13½
Dark tinted.....	.13½	@	.15
Ledgers (sulphite).	—	@	.13
Writing	.10½	@	.13¼
News, f. o. b. Mills—			
Rolls (carloads).	3.50	@	
Sheets (carloads).	—	@	4.25
Sheets (2 tons or			
over)	—	@	4.50
Book—			
No. 1 M. F. (car-			
loads)	9.50	@	—
No. 2 M. F. (car-			
loads)	8.50	@	—
No. 3 M. F. (car-			
loads)	8.00	@	—
No. 1 S. C. (car-			
loads) 10.00		@	—
No. 2 S. C. (car-			
loads)	9.00	@	—
No. 1 Coated and			
litho. 14.00		@	—
No. 2 Coated and			
litho. 13.00		@	—
No. 3 Coated and			
litho. 12.25		@	—
Coated and litho.,			
colored 14.25		@	—
Wrapping—			
Grey	4.50	@	—
White Wrap	5.00	@	—
"B" Manila	5.50	@	—
No. 1 Manila ..	6.75	@	—
Fibre	6.75	@	—
Kraft, M. F.	8.00	@	—
M. G.	8.15	@	—

Pulp

(F. o. b. Mill)

Ground wood.....$27.50		@	35.00
Sulphite easy bleach-			
ing 60.00		@	65.00
Sulphite news grade.50.00		@	60.00
Sulphite, bleached..90.00		@	95.00
Sulphate 70.00		@	

Old Waste Papers

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut..	3.75	@	—
Soft White Book			
Shavings	3.40	@	—
White Blk News	1.70	@	—
Book and Ledger—			
Flat Magazine and			
Book Stock (old)	1.70	@	—
Light and Crum-			
pled Book Stock	1.55	@	—
Ledgers and Writ-			
ings	1.95	@	—
Solid Ledgers....	1.95	@	—
Manilas—			
New Manila Cut.	1.70	@	—
Printed Manilas..	.90	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.90	@	—
Folded News....	.80	@	—
No. 1 Mixed Pa-			
pers	.60	@	—
Domestic Rags—			
Price to mills, f. o. b. Toronto.			
	Per lb.		
No. 1 White shirt			
cuttings	.09¾	@	.10
No. 2 White shirt			
cuttings	.05½	@	.05¾
Fancy shirt cut-			
tings	.04¾	@	.04½
No. 1 Old whites	.04	@	—
Thirds and blues	.02	@	.02½
	Per cwt.		
Black stockings..	2.00	@	2.25
Roofing stock:			
No. 1.....	1.35	@	—
No. 2.....	1.20	@	—
Roofing stock:			
Manila rope	.05	@	.05½
No. 2.....	.01½	@	—
Gunny bagging....	1.00	@	1.25

The Home of Quality

FACTORY
132ND TO 133RD ST. & BROOK AVE

PAPER BAGS

Sacks and Specialties

ESTABLISHED 1901

SCHORSCH & CO.

Manufacturers

500 East 133d Street : New York

This Registered Trade Mark Octagon

on a Paper Bag Vouches for Its Good Quality

Buchanan & Bolt Wire Company

ESTABLISHED 1878 AT HOLYOKE, MASS.

Makers of Highest Grade Fourdrinier Wires, Dandy Rolls, Cylinder Covers, Brass Wire Cloth of all Meshes for Paper, Pulp and Coating Mills—Quality Guaranteed

We make a specialty of Fine Wires for Magazine and Book Papers

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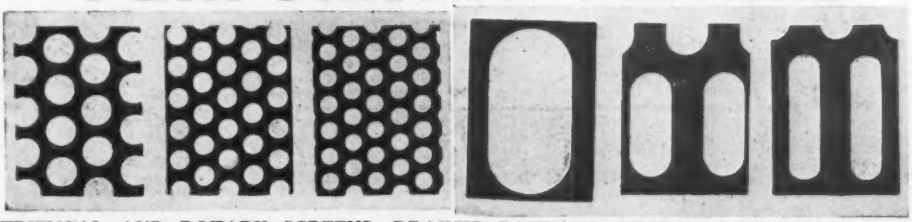
If you judge felt values, not by what you put into the equipment, but what you get out of it—then you will specify ORR 3 stripe Endless Felts, for ORR felts will produce the lowest cost per ton. They "stand up" under severe usage. Orr durability is acknowledged everywhere. Their strength and long life are as dependable as their reliability and quality.

In the 32 grades of Felts and Jackets we can match your most exacting demands. Tell us the kind of paper you desire to make, and we will send you samples of felts that will economically serve you and help you to produce paper at lowest cost per ton.

THE ORR FELT & BLANKET COMPANY, Piqua, Ohio

PERFORATED METALS

All sizes and shapes of Holes



All kinds and thicknesses of Metal

FOR CENTRIFUGAL AND ROTARY SCREENS, DRAINER BOTTOMS, FILTER PLATES, PULP WASHERS, ETC.

The Harrington & King Perforating Company

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CLASSIFIED RATES

Minimum rate for advertisements of 25 words or less, first insertion, $1.00.

SITUATION WANTED, 4 cents a word for first insertion and 2 cents a word for each subsequent insertion of same ad. No ad of less than 25 words accepted.

HELP AND MISCELLANEOUS WANTS, and small For Sale Ads, 4 cents a word for each and every insertion. No ads of less than 25 words accepted.

When answering advertisements, please address the Box Number given in ad.

Answers can be forwarded care Paper Trade Journal, and will be promptly forwarded without extra charge. All should be sent to the New York office, 10 East 39th street. And all should be addressed as the advertisement directs in every case and not simply to the paper.

All classified ads for the current issue must be in hand not later than Monday preceding date of publication.

HELP WANTED

WANTED—One cylinder machine tender experienced on High Grade Box and Tag Board and specialties. Eight-hour tours. Steady work. Address, Box 5228, care Paper Trade Journal. Jy-13

WANTED—Paster man to take charge of three pasters. Excellent opportunity for right man. Address, Box 5229, care Paper Trade Journal. Jy-20

WANTED—We desire connection with mill agents or salesmen who are selling to the fine paper jobbers in the South, Middle West and West to market our lines on these territories on a commission basis. Our lines are standard, regular stock lines, carried by every jobber in the East now. If interested, address, Box 5231, care Paper Trade Journal. Jy-6

WE HAVE A POSITION for a Superintendent of a Mill making Roofing Felt. Preference given applicant experienced in similar work, but will consider application from man whose records show successful operation of a factory doing equal business, about $1,000,000 per year. Age 32 to 42. Do not answer this advertisement unless you have had salary of $5,000 per year, or over. Address, Box 5230, care Paper Trade Journal Jy-6

SALESMAN—Large reputable New York Coarse Paper Jobber looking for man with established trade anxious to make change with concern having small selling staff. Splendid opportunity for right man. Drawing account against commission basis. Address, Box 5224, care Paper Trade Journal. Jy-6

WANTED: Machine Tenders experienced on Cylinder Machines on Roofing Felt, sixty-eight cents per hour. Eight-hour shifts, steady work. Mill located in the East. Address, Box 5215, care Paper Trade Journal. Jy-6

WANTED—Young man to act as Business Manager for Toilet and Tissue Mill. Send copies of references and state experience, especially if have had sales experience. Address, Box 5191, care Paper Trade Journal. Jy-13

SUPERINTENDENT WANTED by modern progressive mill located in Middle Wesct. Must be fully up to date on cylinder tissue, have some knowledge of converting, be good at handling help. Man not over 35 years old preferred. Applicant must state age, past and present connections, salary now receiving if employed and other information considered of interest to a prospective employer. Address, Box 5192, care Paper Trade Journal. tf

WANTED—One first class four Cylinder Machine Tender. Experienced with various weights and thicknesses. Must also understand Harper Machine. Steady work. Eight hour tours. Good pay. Address, Box 5208, care Paper Trade Journal. Jy-6

HELP WANTED

WANTED—Felt Mill Superintendent for California. Thoroughly experienced man on machine making Roofing Felt and Sheathing Paper. Capable of assisting in purchase and erection of new Mill and with ability to economically operate and secure maximum production after erection. Must be successful manager. Give complete experience in first letter. Address, Box 5194, care Paper Trade Journal. Jy-13

WANTED: First class machine tender and back-tender, experienced on felt and asbestos papers. Sober, industrious men. References, age, married or single in first letter. Address, Box 5169, care Paper Trade Jour- Jy-13

TWO BACKTENDERS wanted for Pacific Coast Mill. Excellent opportunity for advancement. Three tours. Good wages. Address, Box 5170, care Paper Trade Journal. Jy-6

WANTED: A good machine tender with experience on cylinder machines making old rope paper. Steady work for the right man. Address, Box 5171, care Paper Trade Journal. tf

WANTED: Beaterman, middle age man preferred. One used to beating Kraft and Bond Paper. One Sheeter Man, one Kidder Pressman, one Back-Tender. State experience and wages expected. Address, Box 5172, care Paper Trade Jounrnal.

WANTED:

two first class backtenders for box board mill. Give age, references, experience and where last employed in first letter. National Paper Products Company, Stockton, California. Jy-13

SITUATIONS WANTED

MARRIED MAN with 15 years' experience in ground wood mills is open for position of superintendent or foreman. Can produce results. Best of references. Address, Box 5232, care Paper Trade Journal. Jy-20

PRACTICAL PAPER MAKER desires a position with a board or specialty mill. Having had experience in both cylinder and fourdrinier mills in all departments. Have been doing engineering work in different mills for past four years. Experienced in construction and mechanical details. Address, Box 5233, care Paper Trade Journal. Jy-20

YOUNG MAN desires connection with large paper or tissue mill. Sales department. Have four years' sales experience, one in paper. At present employed. Willing to travel. Address, Box 5234, care Paper Trade Journal. Jy-6

CAPABLE EXECUTIVE wishes position with paper firm where conscientious efforts along sales lines will win recognition. Address, Box 5235, care Paper Trade Journal. Jy-13

SPLENDID OPPORTUNITY for established firm to secure services of export paper man with splendid connections in Cuba. Personal contact with buyers eliminates uncertainty of extending credits. Address, Box 5236, care Paper Trade Journal. Jy-13

SITUATIONS WANTED

AGGRESSIVE PRODUCER wishes to connect with firm desiring to increase their sales of paper. Prefer connection with small organization with sufficient capital to carry on satisfactory operations selling book and coarse paper to local trade, or for export. Address, Box 5237, care Paper Trade Journal. Jy-13

SUPERINTENDENT wishes position in news print mill. 10 years' experience in up-to-date fast running mills. Knows ground wood and sulphite and can take care of repairs and keep mill in good condition for same. Can furnish best of references from manager of up-to-date and well equipped mill. Address, Box 5238, care Paper Trade Journal. Jy-20

SUPERINTENDENT wishes position. 28 years' experience in mills making news, manilas, fibres, machine finish book, and writing, coating stock, tissue, and some experience on bond papers. Would take night foreman or boss machine tending if chances are good for advancement. Strictly up-to-date on repairs and not afraid to hustle. Best references for any grade mentioned above. Address, Box 5239, care Paper Trade Journal. Jy-20

BEATERMAN wishes a position. Well up on all grades of stock, box boards, container, book manilas, tissues and most all grades. Married. Can furnish best of references. Address, Box 5240, care Paper Trade Journal. Jy-20

POSITION WANTED by Beaterman, one who is experienced in the making of nearly all good grades of paper. Address, Box 5176, care Paper Trade Journal. Jy-6

COATING MILL SUPERINTENDENT now employed, desires to make a change. Twenty-four years of sound practical experience on all grades of coated papers. For further information, address, Box 5219, care Paper Trade Journal. Jy-20

BOSS BEATERMAN wants position. Accustomed to nearly all grades. Up-to-date color man. Good references. Can get good results if given a chance. Address, Box 5220, care Paper Trade Journal. Jy-13

PRACTICAL MASTER MECHANIC desires position. Capable of installing and keeping machinery in first-class condition. Ability to handle help and get results. Best references. Address, Box 5221, care Paper Trade Journal. Jy-13

OPEN: SUPERINTENDENT of ability, all grades box, container, wall, bristol boards, covers, middles, index and cylinder papers. Expert on de-inking, upkeep and results. Will go any place. Address, Box 5177, care Paper Trade Journal. Jy-6

TONNAGE SALESMAN: Thoroughly experienced, all grades, book and news, desires connection with reputable manufacturer or mill agent selling to jobbers and large consumers. Age, 30; clean cut, well educated. Address, Box 5223, care Paper Trade Journal. Jy-6

WANTED—Position as Assistant Superintendent. Twenty years' experience on Fourdrinier machines making rag and sulphite papers. Married and industrious. Good references. Address, Box 5196, care Paper Trade Journal. Jy-6

A MAN thoroughly competent to run Calender and Press Roll Grinding Machine and able to determine Crowns desired. Wishes permanent or temporary work. Address, Box 5197, care Paper Trade Journal. Ag-3

SUPERINTENDENT desires position as Corrugated and Fibre Superintendent. Nine years' experience, thoroughly familiar with all makes, Combiners and swift Combination Machines. Address, Box 5200, care Paper Trade Journal. Jy-13

XUM

SITUATIONS WANTED

BOSS FINISHER desires to make a change. Twelve years of Finishing Department experience on Cutters, Trimmers, Kidder Press Rewinder all styles of finishing domestic and export on Wrappings, Tissue and Glassine. Capable of taking full charge of finishing and shopping department, also inventory. Can furnish good references as to ability, character and personality. Address, Box 5198, care Paper Trade Journal. Jy-13

MASTER MECHANIC with 27 years' Pulp and Paper Mill experience is open for engagement, familiar with Boilers, Engines, Electrical and General Maintenance. First class references. Address, Box 5201, care Paper Trade Journal. Jy-20

PAPER SALESMAN in New York City who can produce a large volume of business with adequate co-operation, desires connection. Drawing account on Commission basis. Correspondence invited. Address, Box 4635 care Paper Trade Journal. tf

A **PAPERMAKER** of ability knows paper from A to Z, number of years jobbing experience, as Manager and Buyer, Paper, Twine and Cordage, desires to connect with a reliable House in a similar capacity, high grade references. Address, Box 5185, care Paper Trade Journal. Jy-20

WANTED POSITION—As superintendent. Twenty-one years' experience; used to Specialties, Colors and Wrapping, all grades of Boards and Fibres. Knows how to handle help. Can keep up repairs. Used to Fourdrinier and Cylinder Machines. Address, Box 4786. care Paper Trade Journal. tf

WANTED: By a New York Manager and Representative of an out of town Manufacturer of Toilet Paper and Paper Towels, similar connection with reputable manufacturer. Have been in the line over 20 years, over 15 years of which I have spent with my concern. Address, Box 5114, care Paper Trade Journal. Jy-6

SUPERINTENDENT of many years' experience in producing Box Boards is seeking a connection where quantity and quality production at a minimum cost will be recognized. Have best of references, for efficiency and maintaining harmony among employees. Address, Box 5117, care Paper Trade Journal. Jy-13

SUPERINTENDENT now employed as such work who had practical experience on Cylinder, Harper, Fourdrinier and Combination machines, well posted on nearly all grades of paper, also practical experience on ground wood and sulphite, also mill construction and upkeep of same. Past records show good results. Would prefer commission proposition, also invest capital with reputable company. Address, Box 5132, care Paper Trade Journal. Jy-6

YOUNG MAN, 25, married, wishes to connect with Paper Mill. Has had experience in Paper Mill cost accounting, payrolls and mill systems; also selling experience. At present calling on printers and publishers. Feels qualified to fill almost any inside position or be useful in Sales Department. Address, Box 5145, care Paper Trade Journal. Jy-13

MAN with ten years' practical experience in sulphate pulp manufacture is open for position as Superintendent or Assistant. Can obtain highest results. Best of references. Address, Box 5202, care Paper Trade Journal. Jy-13

SITUATIONS WANTED

BEATER ENGINEER wishes to make a change from his present position. Experienced on high grade Box Boards, Tests, etc. Also fine papers. Married, sober. Good references. Address, Box 5167, care Paper Trade Journal. Jy-6

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OR
Manager

now employed will be open for position after July 15th. Experience covering a variety of products, including High Grade Book, Envelope, Bonds, Ledger, Writings, and Specialties. Would like to communicate with concern planning such a change in their organization. Address, Box 5195, care Paper Trade Journal. Jy-13.

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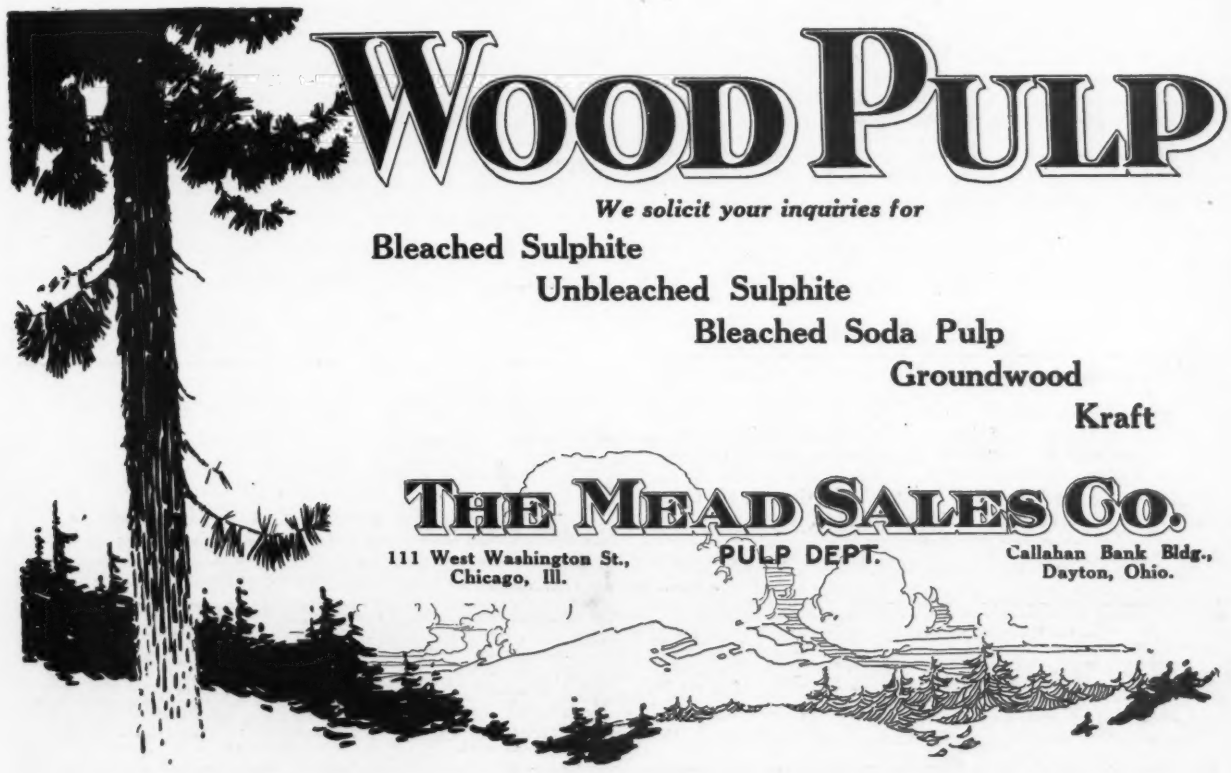

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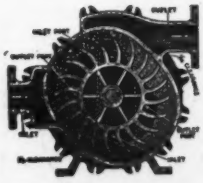

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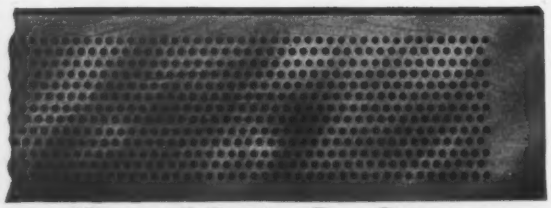

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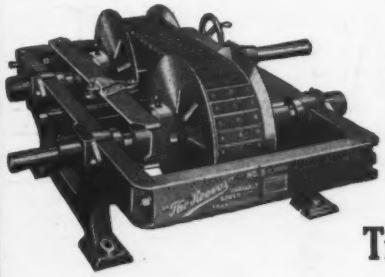

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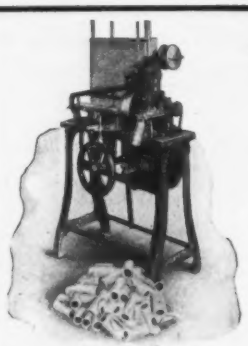

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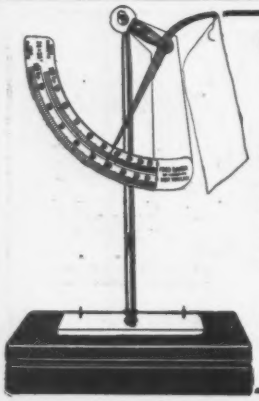

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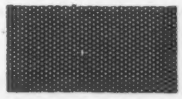

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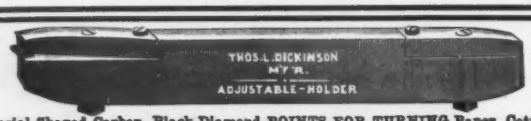

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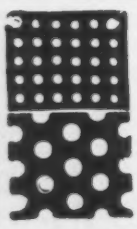
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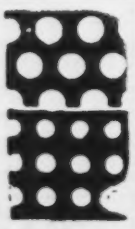

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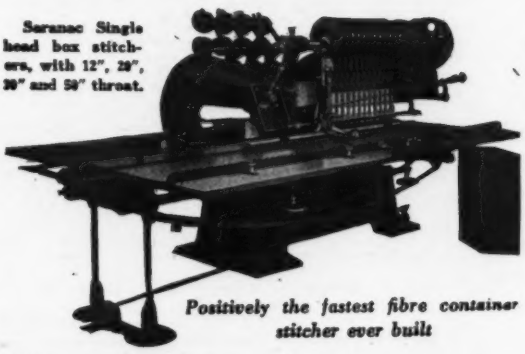

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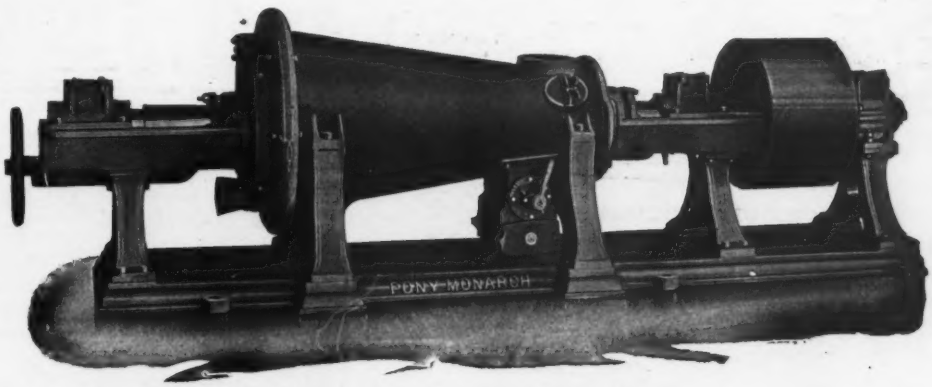

The Noble & Wood Machine Co., Hoosick Falls, N.Y.

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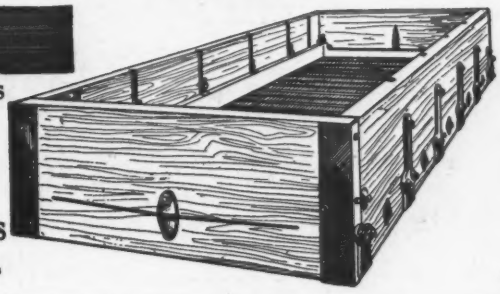

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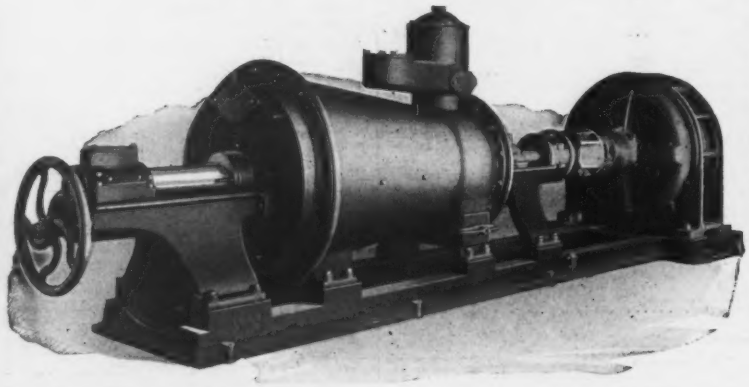

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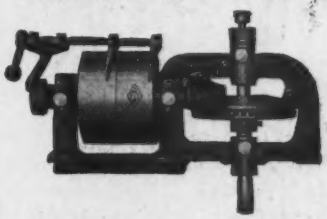

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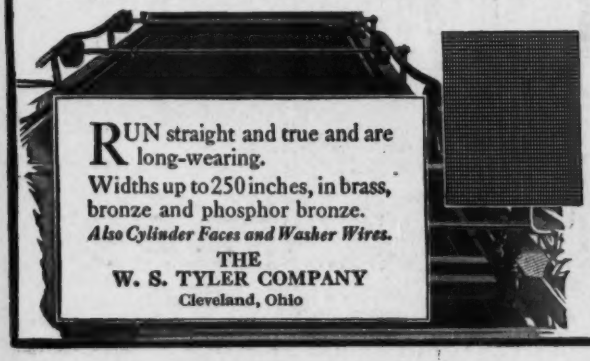

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